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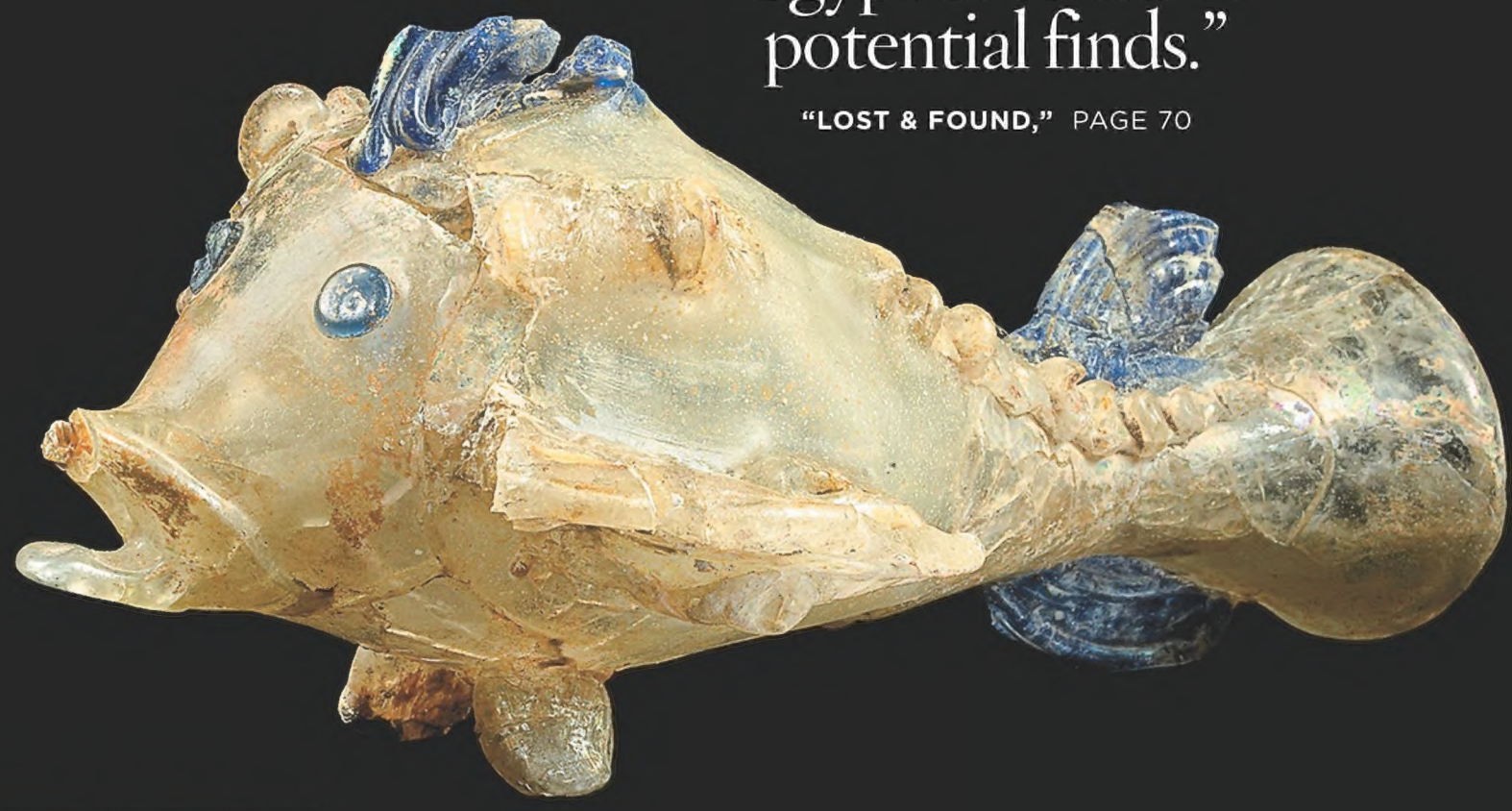
Smithsonian features

SEPTEMBER 2008 · VOLUME 39, NUMBER 6

"Afghanistan is one of the richest—and least-known—archaeological regions in the world," says Hiebert. It "rivals Egypt in terms of potential finds."

"LOST & FOUND," PAGE 70



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Ecologists are now documenting the steep decline of marine populations in a dramatic way—studying old snapshots of fishing-boat tourists with their catches
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Abraham Lincoln would lose his race for the U.S. Senate in 1858. But his riveting debates with Stephen A. Douglas propelled him toward the presidency **BY FERGUS M. BORDEWICH**

70 Lost & Found

Long missing, Afghanistan's most spectacular treasures—including the 2,000-year-old "Bactrian Hoard"—are now touring the United States
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80 Four for a Quarter

Smile. Smooch. Strike a pose. Photographer Nakki Goranin celebrates a machine that captured the hearts—and faces—of 20th-century Americans
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86 Macau Hits the Jackpot

In just four years, the once-impoverished former Portuguese colony on the South China coast has become the gambling capital of the world
BY DAVID DEVOSS
PHOTOGRAPHS BY JUSTIN GUARIGLIA

ON THE COVER **A school of bigeye trevally circle in the waters off Borneo.** PHOTOGRAPH BY NORBERT WU / MINDEN PICTURES

THIS PAGE **A first-century A.D. fish-shaped flask is one of 228 works on display in the exhibit "Afghanistan: Hidden Treasures From the National Museum, Kabul."** PHOTOGRAPH BY THIERRY OLLIVIER / MUSÉE GUIMET

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Civil War soldiers knew they were camped on farmland that once belonged to George Washington's family. Some sent cherry pits home in the mail, in reference to the legendary felled tree.

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Young George Washington confesses to his father that it was he who cut down the cherry tree, in this 1867 lithograph of the dubious morality tale.

PICTURE HISTORY

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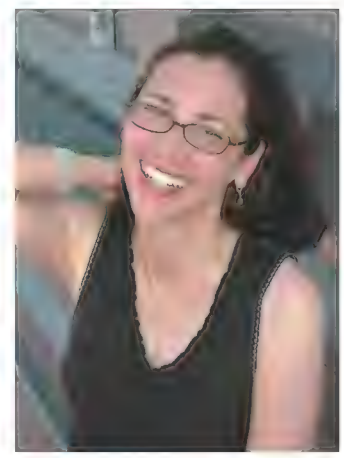
FROM THE EDITOR

Newcomers

Two new key additions to our staff

BY CAREY WINFREY



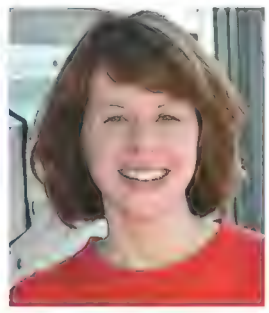
Keehan: Freeing feeling

IF YOU THINK the past few issues have been looking pretty smart, as I do, we have Maria Guerrere Keehan, our new art director, to thank. Maria came to us this past January from *Fortune*, where she had been an associate art director for some 18 years. Her relationship with SMITHSONIAN, however, goes back much further, to the subscription her parents gave her when she was about 14. "I think I read it all through college," she says. That would be the University of Connecticut.

As for her design sense, "I hate the word 'elegant,' but I don't know what else to say. I tend to be a traditionalist, and I do try to keep the readership in mind. I really believe that it's not about me and whether I'm pleased with things. It's whether I'm making the magazine more palatable, more accessible, to the reader. That's really the challenge."

At the moment Keehan and Associate Art Director Erik Washam are working on simplifying the departments—the shorter items in the front and back of the magazine—to make them both more coherent and more distinct from the feature "well" in the magazine's center. "We are in the process of updating them," she says. "Not drastically but a little less visual density." Stay tuned.

Keehan says that near the end of her *Fortune* stint, she was actually thinking about switching gears entirely to try her hand at writing. In retrospect, she thinks her restlessness had more to do with the restrictions of business journalism than disaffection with design per se. SMITHSONIAN, with its wide range of subject matter, energizes her, she says. "Each story is such a freeing feeling. I'm enjoying designing again, and, now that I'm here, I can't believe that I ever thought that I would stop doing it. It's so refreshing. It's just so enjoyable."



McCarthy: Ideal Web pedigree

MAURA MCCARTHY, OUR NEW WEB EDITOR, is another key addition to the staff, as well as another longtime reader of the magazine. (We hire *only* longtime readers.) Before we enticed her away, McCarthy had been at the *Washington Post* Web site for more than seven years, the last three as editor of the site's lively Arts and Living section. With a master's degree in art history and a self-described passion for history, science and travel, she has an ideal pedigree for someone charged with translating a monthly magazine about those subjects into a Web site (Smithsonian.com). "The goal is to make it a daily destination," says McCarthy. "To do that you have to create exciting new content, and you have to find ways to bring the stories in the magazine to people who come to the site through a link, a search engine or a blogger's recommendation. I think people should feel that Smithsonian.com is a part of their world, and they'll want to check in with us on a regular basis."

MOLLY ROBERTS (2)

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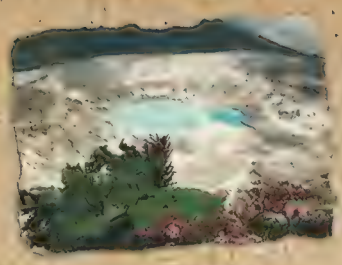

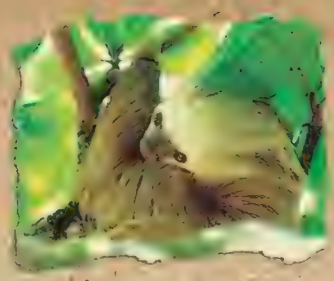

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LETTERS READERS RESPOND TO THE **JULY** ISSUE

By all means, let's explore space with probes and instruments. But before we export ourselves to the moon [Around the Mall: "Lunar Living"], let's get our garbage, our consumption and our relations with one another under control. Let's learn to protect the earth's remaining wild places and to reverse the destruction we have caused in the name of development. We are, thus far, no treasure to share with the universe.

RONALD SHELDEN, BASS HARBOR, MAINE

LUNAR PERSPECTIVES

["LUNAR LIVING"] might more aptly have been titled "Loony Living." Scientists who would readily spend hundreds of billions of dollars should be controlled. Settling other planets? How about getting this planet in order? First step: constructively use that astronomical funding for the benefit and welfare of mankind on earth.

JOHN GEISMAR
SYDNEY, AUSTRALIA

PHYSICIST Steven Weinberg says manned space exploration "doesn't serve any important purpose." What he fails to appreciate is that from an inspirational perspective, all the robotic telemetry in the universe fails to equal "one small step for man. . . ."

WILLIAM PHINNEY
MELROSE, MASSACHUSETTS

IN LIVING COLOR

HAVING STUDIED the culture and art of the ancient world, I must say it's about time we got to see sculptures the way the ancients saw them—in living color ["True Colors"]. As romantically beautiful as white marble sculptures are, what we see today is merely a shadow of what was. We are looking at scaffolding that is supposed to support vivid hues. Imagine covering modern murals with grime or scraping off most of the paint. They would look distorted and inaccurate, as sculptures without their paint are inaccurate. I would like to see all ancient marbles restored to their true colors.

BILL HERNANDEZ
SAN RAFAEL, CALIFORNIA

IT IS NOT the coloration that causes a perceptual disconnect for me, but rather some of the design decisions underlying Vinzenz Brinkmann's reconstructions of ancient sculptures. For example, the subtle facial features of "Peplos Kore" are lost in translation: consider the light in her eyes and her bemused smile, both entirely missing. Similarly, the highlighting in Caligula's locks seems unfaithful to the original. And in the epic "Alexander Sarcophagus," the features and expressions of almost all the faces appear poorly rendered. "Our first obligation is to get everything right," Brinkmann says. "Do you think someday we can start making music?" Yes, I feel they can someday make music. But for that happy moment to occur, many fundamental elements must be made right.

SANDY ROTHMAN
BERKELEY, CALIFORNIA

VOYAGE FROM THE HEARTLANDS

READERS who enjoyed learning about the voyages of the Viking replica ship *Sea Stallion* ["Raiders or Traders?"] might like to know about the *Hjemkomst*, a replica of a Viking ship built by Robert Asp in landlocked Minnesota. Though stricken with leukemia, Asp lived to see the ship completed and to take it on a trial voyage in Lake Superior. It was launched on a 6,100-mile voyage to Bergen, Norway, in 1982 by a mostly amateur crew that included his friends and family. A documentary of the trip shows how the crew weathered a major storm in the Atlantic. Today, the ship is housed at the Hjemkomst Center in Moorhead, Minnesota.

H. RONKEN LYNTON
PITTSBORO, NORTH CAROLINA

BASEBALL, PURE AND SIMPLE

WHEN I SAW Neil Leifer's photograph [Indelible Images: "It's in the Bag"], I was mesmerized. Besides being a fantastic image, something else seemed unusual. Then it struck me. There were no ads in the background—just the players, the field, the fans—baseball as it should be.

LINDSEY WILKERSON
MONROE, LOUISIANA

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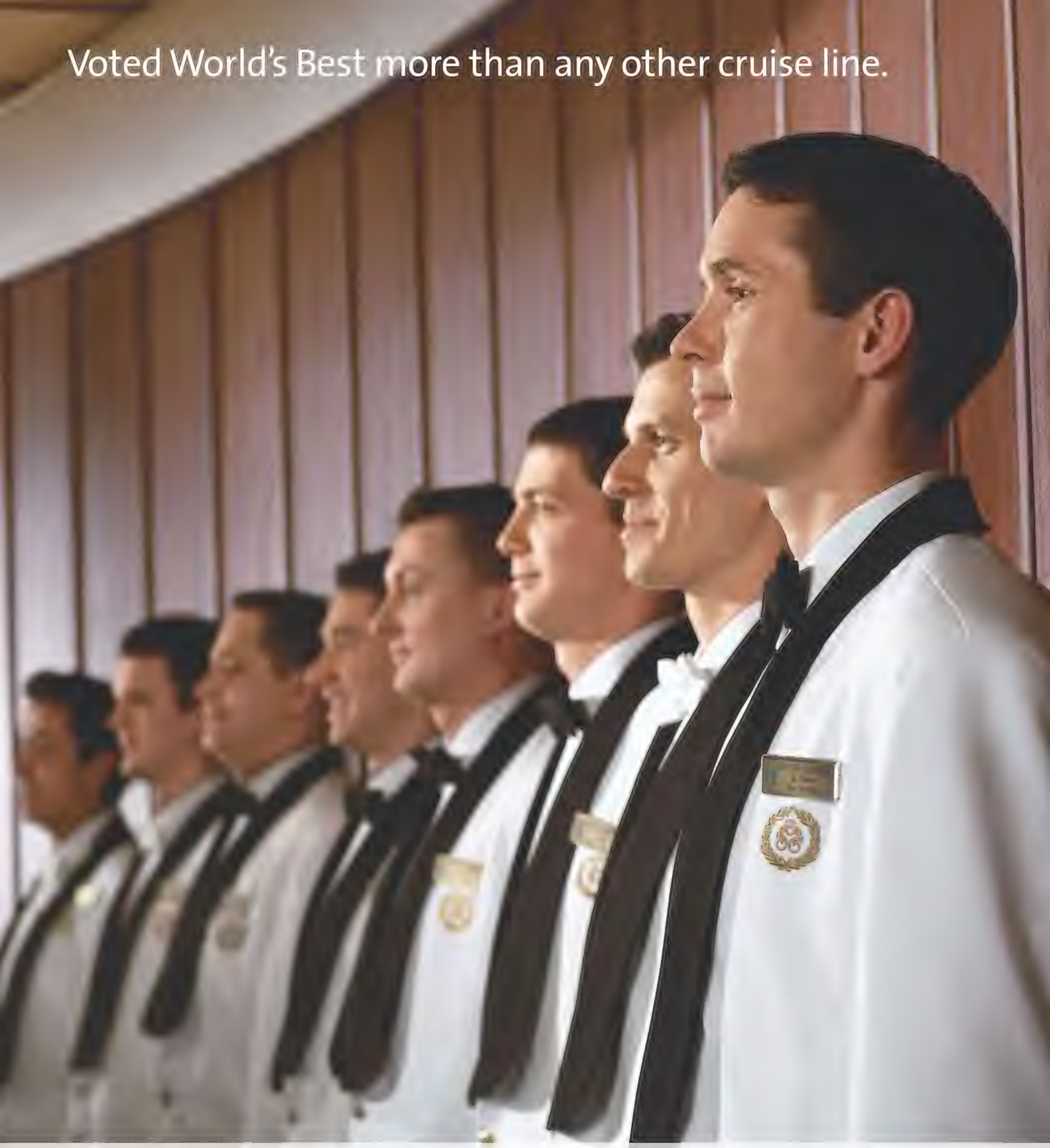

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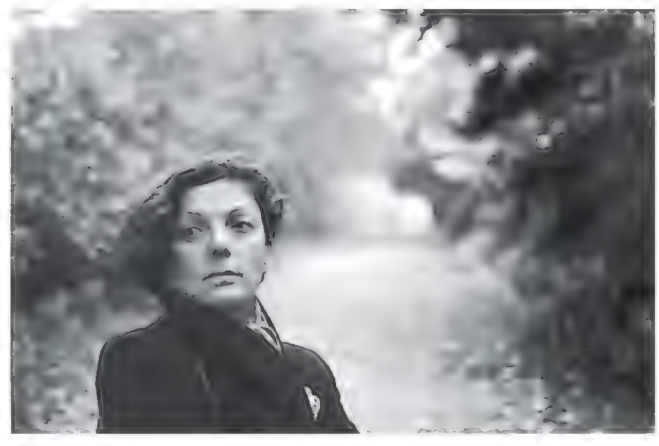
Day of the Iguanas

On a morning in a Oaxacan market, photographer Graciela Iturbide made one of the most enduring images of Zapotec life **BY LYNELL GEORGE**

IN THE EARLY 1920S, Diego Rivera returned to Mexico City from a trip to Oaxaca and began telling friends about a place where strong, beautiful women ruled. Soon Rivera was painting such women, and within a decade, the list of artists and intellectuals that followed the road south to Oaxaca included Frida Kahlo, Sergei Eisenstein and Langston Hughes. Photographers came too: Henri Cartier-Bresson, Tina Modotti, Edward Weston. To varying degrees, they were all taken with the indigenous Zapotec women on the Isthmus of Tehuantepec and the culture in which they really did enjoy more power and freedom than other women in Mexico.

Graciela Iturbide didn't travel to the region until 1979, but the photographs she made there have proved to be some of the most enduring images of Zapotec life. And her portrait of a woman named Zobeida—titled *Nuestra Señora de las Iguanas* (*Our Lady of the Iguanas*) and included in *Graciela Iturbide: Juchitán*, a recent collection of Iturbide's work—has practically become a symbol of Zapotec womanhood.



By the time Iturbide made her trip to the isthmus city of Juchitán, she had already shed several skins. Married at 20, a mother of three by 23, she seemed set for a traditional life as an upper-class wife in Mexico City. But her 6-year-old daughter died from an illness in 1970, and later Iturbide and her husband divorced. Although she had been studying filmmaking, Iturbide signed up for a still photography class taught by the Mexican master Manuel Alvarez Bravo. She was one of only a few students to enroll, and the class developed into an apprenticeship.

Iturbide had begun photographing in Mexico City and among the Seri Indians in the Sonora Desert when, in 1979, she was invited to take pictures in Juchitán by the artist Francisco Toledo, a native son and an advocate for the region's arts and culture. Iturbide spent a few days observing the Zapotec women, who seemed to project an almost ethereal self-possession—independent, at ease with their bodies and comfortable with their power, which came from control of the purse. "The men work" on farms and in factories, Iturbide says, "but they give money to the women."

The women also ruled the marketplace, where they sold textiles, tomatoes, fish, bread—"everything," Iturbide says, "all of it carried on their heads." It was amid the market's tumult one morning that she spotted Zobeida (whose name has also been given, incorrectly, as Zoraida). "Here she comes with the iguanas on her head! I could not believe it," Iturbide says. As Zobeida got ready to sell the lizards (as food), the photographer says, "she put the iguanas on the ground and I said: 'One moment, please. One moment! Please put the iguanas back!'"

Zobeida obliged; Iturbide raised her camera. "I had a Rolleiflex; only 12 frames and in this moment," she says. "I didn't know if it was OK or not."

It was more than OK. A year or so later, Iturbide present-

"Only one photo from the 12 I took of her was good, because it was the only one where the iguanas raised their heads as if they were posing," Iturbide (above: in 1989) says of the picture *Nuestra Señora de las Iguanas*, 1979 (opposite).

MAURICIO ROCHA ITURBIDE / ROSE GALLERY; P. 13 GRACIELA ITURBIDE / ROSE GALLERY

When Iturbide went to Japan, the curator told her he was glad she didn't bring her iguanas.

Iturbide made repeated visits over six years to photograph Juchitán's "big, strong, politicized, emancipated, wonderful women," including their custom of making icons from hand-shaped roots or branches (above: *Manos Poderosas*, or *Powerful Hands*, 1986).

ed several of her Juchitán photographs to Toledo, to be shown in a cultural center he had founded in the city. Somewhat to her surprise, *Our Lady of the Iguanas*—which she considered as but one image among many—was a hit. Residents asked for copies of it, and they put it on a banner. "The image is a very important one to the people of Juchitán," Iturbide says. "I don't know why. Many people have the poster in their house. Toledo made a postcard." The locals renamed the image "The Juchitán Medusa." "There are many legends about the iguanas and other animals, and maybe that image relates," Iturbide says. *"Maybe."*

Although Iturbide returned to Juchitán many times for the better part of a decade, she also traveled widely, photographing in Africa, India and the American South. To her surprise, the Juchitán Medusa also traveled—turning up as an element in a Los Angeles mural, for example, and in the 1996 American feature film *Female Perversions* (starring Tilda Swinton as an ambitious, conflicted lawyer). When Iturbide went to Japan for an exhibition of her work, the curator told her he was glad she didn't bring her iguanas, says Rose Shoshana, founder of the Rose Gallery in Santa Monica, California, which represents Iturbide.

Ultimately, the pictures the photographer made in Juchitán were important to both her work and her reputation, says Judith Keller, who curated a recent Iturbide retrospective at the Getty Center in Los Angeles. "It reinforced her concern about the lives of women, and it validated her thinking that this is an important topic and this is something she should continue with," Keller says. In October, Iturbide will be awarded the Hasselblad Foundation International Award.

As for the Lady of the Iguanas herself, Zobeida died in 2004, but not before the image made her something of a celebrity. As anthropologists debated the exact nature of Juchitán society (matriarchal? matrifocal?), journalists would seek her out to ask, inevitably, if she was a feminist. Iturbide says Zobeida would answer: "'Yes. When my husband died, I work. I take care of myself.'"

LYNELL GEORGE *writes about arts and culture for the* Los Angeles Times.

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WILD THINGS

LIFE AS WE KNOW IT

BY AMANDA BENSEN, ANIKA GUPTA, T.A. FRAIL, ABIGAIL TUCKER AND SARAH ZIELINSKI

GUNNING FOR A FIGHT

Two chicks hatch; only one will survive. Nazca boobies on the Galápagos Islands often lay two eggs, but there's rarely enough food for two nestlings. The birds avoid this problem with a fight to the death soon after birth. Now a study led by Wake Forest University reveals what prepares chicks for battle: high levels of testosterone and other hormones that promote aggression.

A SIDEWAYS GLANCE

Even Darwin floundered to explain flatfish like sole and halibut. Sure, having both eyes on the same side of your head is helpful if you lie on the ocean floor (far left: a flounder), but how does such a strange gaze evolve? Fossils from 50 million years ago, newly analyzed by a University of Chicago researcher, show that a flatfish ancestor had one eye in a normal position and one near the top of its head (left: arrow), a transition to its modern form.

Observed

NAME: Agamid lizards living in Australia.
WALK: On all fours. **RUN:** On their hindquarters, at least in some species.
CONFOUND: Attempts to ascertain why, in evolutionary terms.
SUBMIT TO: Treadmill running and high-speed video recording.
WHICH YIELD: Data suggesting that species that run bipedally do so because they are . . . popping wheelies. Species with heavy hindquarters are most susceptible to having their front quarters lift off the ground during rapid acceleration, according to researchers in Australia. No evolutionary advantage was evident.

Watch the lizards pop wheelies at Smithsonian.com/wildthings

FLORAL FLIRTATION

Flowers sway in the breeze to beckon pollinators, a study from Wales' Aberystwyth University suggests. Sea campion plants with slim stems fluttered the most and attracted the most insects. (Flowers with average stems set the most seeds though, apparently because pollinators visited more stable flowers longer.) The study is the first evidence that "waviness," like color and scent, influences a flower's attractiveness.

TIME TO GET CRACKING

The sound that Nile crocodile embryos make shortly before hatching is not just baby talk. Scientists in France played recordings of the "umph! umph!" calls to croc mothers and egged siblings; the moms dug up their nests and the babies got cracking. Synchronized hatching may minimize the nest's exposure to predators.

KARI NIEMELÄINEN / ALAMY; BLICKWINKEL / ALAMY; MATT FRIEDMAN / UNIVERSITY OF CHICAGO; CRISTOFER CLEMENTE (8); FRANS LANTING / CORBIS; WOUTER HAGENS / WIKIPEDIA

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MY KIND OF TOWN

SEATTLE, WASHINGTON

In a "city of neighborhoods," Johnson found "an ideal environment for nurturing innovation, individualism and the creative spirit."

Northwest Passage

He arrived unsure of what to expect—but the prolific author quickly embraced the city's energizing diversity

BY CHARLES JOHNSON PHOTOGRAPHS BY BRIAN SMALE

I WAS HIRED IN 1976 to teach at the University of Washington, and so made the cross-country drive to Seattle from Long Island, where I'd been a doctoral student in philosophy at the State University of New York at Stony Brook. But before leaving for a part of the country completely unknown to me (I'd never been west of the Mississippi), I mentioned to my friend and mentor, the novelist John Gardner, that my wife, newborn son and I were moving to the Pacific Northwest. I remember he paused, pushed his vanilla-colored Prince Valiant hair back from his eyes and looked as if a pleasant image had flickered suddenly through his mind. Then he said, "If my daughter ever married a black man, the first thing I'd do is ask her to move to Seattle."

Now I knew how fiercely Gardner loved his children, but at the time I was unable to unlock his meaning. The first day I set foot in this city, however, I began to glimpse what he meant. It was peopled with every sort of American I could imagine: Native Americans, whites who sprang from old Scandinavian and German stock, Chinese and Japanese, Senegalese and Eritrean, Hindu and Sikh and Jewish, gay and lesbian, and blacks whose families settled in the territory in the late 19th century. It was a liberal city remark-

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ably similar in texture and temperament to San Francisco (both are built on seven hills, have steep streets and have burned to the ground).

Former UW president William Gerberding once referred to the Northwest as "this little civilized corner of the world," and I think he was right. The "spirit of place" (to borrow a phrase from D. H. Lawrence) is civility, or at least the desire to appear civil in public, which is saying a great deal. The people—and especially artists—in this region tend to be highly independent and tolerant. My former student and native Northwesterner David Guterson, author of the best-selling novel *Snow Falling on Cedars*, recently told me that the people who first journeyed this far west—so far that if they kept going they'd fall into the Pacific Ocean—came mainly to escape other people. Their descendants are respectful of the individual and of different cultural backgrounds and at the same time protect their privacy. They acknowledge tradition but don't feel bound by it. As physically far removed as they are from cultural centers in New York, Boston, Washington, D.C. and Los Angeles (the distance from those places is both physical and psychic), they are not inclined to pay much attention to fashions or the opinions of others and instead pursue their own singular visions. I'm thinking of people like Bruce Lee, Jimi Hendrix, Kurt Cobain, Ray Charles in the late 1940s; playwright August Wilson; artists such as Jacob Lawrence and George Tsutakawa; and writers such as Sherman Alexie, Octavia Butler, Timothy Egan, Theodore Roethke and his student David Wagoner (serial killer Ted Bundy once took one of his poetry workshops). Jonathan Raban, an immigrant from England, captures the ambience of this book-hungry city perfectly:

"It was something in the disposition of the landscape, the shifting lights and colours of the city. *Something*. It was hard to nail it, but this something was a mysterious gift that Seattle made to every immigrant who cared to see it. Wherever you came from, Seattle was queerly like home. . . . It was an extraordinarily soft and pliant city. If you went to New York, or to Los Angeles, or even to Guntersville [Alabama], you had to fit yourself to a place whose demands were hard and explicit. You had to learn the school rules. Yet people who came to Seattle could somehow recast it in the image of home, arranging the city around themselves like so many pillows on a bed. One day you'd wake up to find things so snug and familiar that you could easily believe that you'd been born here."

The "spirit of place" is civility, or at least the desire to appear civil in public, which is saying a great deal.

Jonathan Rabin once wrote that in Seattle (above: Pike Place Market), "you'd wake up to find things so snug and familiar that you could easily believe that you'd been born here."

In other words, this is an ideal environment for nurturing innovation, individualism and the creative spirit. (Those words are probably somewhere in the mission statement for Microsoft, which in 1997 sent me for two weeks to Thailand to write about "The Asian Sense of Beauty" and whose campus is just a 25-minute drive from my front door.) Here we find poetry in the lavish scenery right outside our windows, which dwarfs, predates and no doubt will long outlive everything we write about it. The mountains rise up to 14,000 feet above the sea. There are magnificent, rain-drenched forests, treeless desert lands, glacial lakes, some 3,000 kinds of native plants and hundreds of islands in Puget Sound: an enveloping landscape as plentiful and prolific on its enormous canvas as I suppose we as artists would like to be on our smaller ones. Thus, it has always struck me as fitting that Sea-Tac was among the first airports in America to set aside a room specifically for meditation. (After traveling through Puget Sound or visiting the waterfront in Pioneer Square, you need to sit quietly for a while and savor being so delightfully ambushed by such beauty.)

The Pacific Northwest's geographic diversity, its breathtaking scale and our Lilliputian niche in the shadow of such colossi as Beacon Rock on the Columbia River or

majestic Mount Rainier humble a person's ego in the healthiest way. It reminds me of my place as one among uncountable creatures in a vast commonwealth of beings that includes the Canada lynx, bobcat, white-tailed ptarmigan and quail. It never fails to deflate my sense of self-importance. It tips me easily toward a feeling of wonder and awe at this overly rich and inherently mysterious world in which I so fortunately find myself.

If you're standing, say, on Orcas Island, you can see whales cavorting in viridian waves, and the air out there on the islands is so clear, so clean, that each breath you draw feels like some sort of blessing. This sort of Northwest experience helps me take the long view on life's ephemeral problems. Need I add that this opportunity to step away from the hectic pace and cares of city life whenever one wishes is a stimulus for art, philosophy and spiritual contemplation? And all those inward activities are enriched by the misty, meditative mood invoked by the Northwest's most talked about feature—rain—and the wet evening air that causes portions of the geography to gleam and hazes other parts, sfumato, from November through February, in an atmosphere that is a perfect externalization of the brooding inner climate of the creative imagination. As a child growing up in Illinois, I shoveled snow. Here, you might say, we shovel rain, but with weather like this, it's easy to stay inside, reading and writing, until spring.

After visiting the waterfront in Pioneer Square, you need to sit and savor being ambushed by such beauty.

"Here we find poetry in the lavish scenery right outside our windows," Johnson writes, "which dwarfs, predates and no doubt will long outlive everything we write about it."

Being a transplant like Raban and a Buddhist practitioner means that even after living here for more than half my life, I don't take the gift of this beauty—nor the room to stretch out spirit and body—for granted. I don't mean that metaphorically. I taught kung fu for ten years at Phinney Neighborhood Center, sharing that space with a yoga class, and our students at one time included a scientist, an architect, UW professors and a Zen abbot. My wife, Joan, born and raised on Chicago's South Side in a sometimes violent housing project called Altgeld Gardens, and I happily raised our children here. They can truly call this place—accurately described as a "city of neighborhoods"—home. On Capitol Hill two years ago, our daughter, Elisheba, a conceptual artist, opened Faire Gallery/Café, which features jazz performances and the occasional play or open-mic poetry night as well as art shows and comedy performances by young local talent. Faire is where I hang out these days, conducting my classes and keeping appointments in a vibrant atmosphere—straights and gays, students and goths—that recalls the freewheeling creative vitality of Berkeley in the late 1960s.

For Seattle is, whatever else, a place where the young, single, iconoclastic and open-minded seem to thrive. Remembering Gardner's words from three decades ago, I imagine he would give that same advice today. The Rev. Samuel McKinney, once pastor of Mount Zion Baptist, the largest black church in the region, was a Morehouse College classmate of Martin Luther King Jr. and invited him to Seattle in 1961. On March 12, 2007, King County (where I live) changed its official logo from an imperial crown to an image of the great civil rights leader; MLK joins Chief Sealth (Seattle), who represents the city, and George Washington, avatar on the state's seal.

Were he alive today, King might not describe the Pacific Northwest as the Promised Land, but I believe he would be pleased by how Seattle's citizens—however imperfect we may be—strive to realize his dream of a "beloved community" in a city poised at the edge of the nation's western end.

CHARLES JOHNSON *recently collaborated on* Mine Eyes Have Seen: Bearing Witness to the Civil Rights Struggle.

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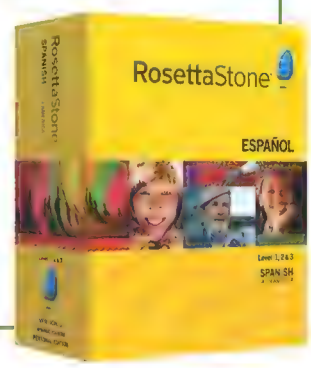

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THIS MONTH IN HISTORY

SEPTEMBER ANNIVERSARIES
MOMENTOUS OR MERELY MEMORABLE

BY ALISON McLEAN

70 YEARS AGO
THE LESSON OF MUNICH

British Prime Minister Neville Chamberlain (left) and the leaders of France and Italy make a pact with Adolf Hitler in Munich, September 30, 1938, to let Germany annex a portion of Czechoslovakia in exchange for a promise of peace. When Hitler reneges and invades Poland in 1939, the Munich agreement is decried as futile appeasement, and World War II is on.

120 YEARS AGO
SAY CHEESE

"You press the button, we do the rest," George Eastman promises buyers of his Kodak box camera, patented September 4, 1888. Loaded with Eastman's flexible, rolled film—far less bulky than glass plates—the easy-to-use $25 camera and its clever marketing make photography a medium for the masses. Users mail the whole box back to Kodak to get their snapshots—and a reloaded camera, ready to click.

80 YEARS AGO MOLDY BUT GOODY

Scottish bacteriologist Alexander Fleming returns to St. Mary's Hospital in London from a holiday on September 3, 1928, to find mold growing on one of his staphylococcus cultures. Noting that no staphylococci are growing near the mold, Fleming investigates. He names the "mould juice" penicillin, for the penicillium mold (left) that produces it. Fleming publishes his discovery in 1929, but it will be a decade before Oxford scientists Howard Florey and Ernst Boris Chain isolate and purify it for use as an antibiotic. Fleming dies in 1955 at age 73.

170 YEARS AGO FREE AT LAST

Frederick Douglass, born a slave in 1818, escapes from bondage in a Baltimore shipyard on September 3, 1838. Disguised in seamen's clothes and carrying the borrowed papers of a free sailor, Douglass jumps, ticketless, onto a northbound train. Speaking "like an 'old salt,'" he convinces the conductor that the papers are his. A day later he is in New York City, where he marries Anna Murray, his free fiancée. Douglass, who recounts slavery's horrors in a best-selling autobiography in 1845, founds several newspapers and is a vocal advocate for equal rights for all people. He dies in 1895 at age 77.

50 YEARS AGO CHIP SHOT

On September 12, 1958, Texas Instruments engineer Jack Kilby (left) demonstrates the first microchip, designed while he tinkered through a company vacation. His "integrated circuit," layered onto a sliver of semiconductor material, eliminates the need to connect discrete components. With improvements by Robert Noyce, who patents a similar idea, the microchip makes more complex circuits—and modern electronics—possible. Kilby wins the Nobel Prize in 2000.

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NMAH, SI; CORBIS; VISUALS UNLIMITED / CORBIS; GRANGER COLLECTION, NEW YORK; TEXAS INSTRUMENTS

Archaeologists (above: Paul Nasca) tried to find Washington's boyhood home for years. This past July, they succeeded.

Washington's Boyhood Home

Archaeologists have finally pinpointed the Virginia house where our first president came of age

BY DAVID ZAX

SUFFICE IT TO SAY that the idea of historic preservation hadn't quite caught on by the mid-19th century. As Union soldiers decamped on the banks of the Rappahannock River before their offensive on Fredericksburg, Virginia, in December 1862, they knew they were on farmland that had once belonged to George Washington's family.

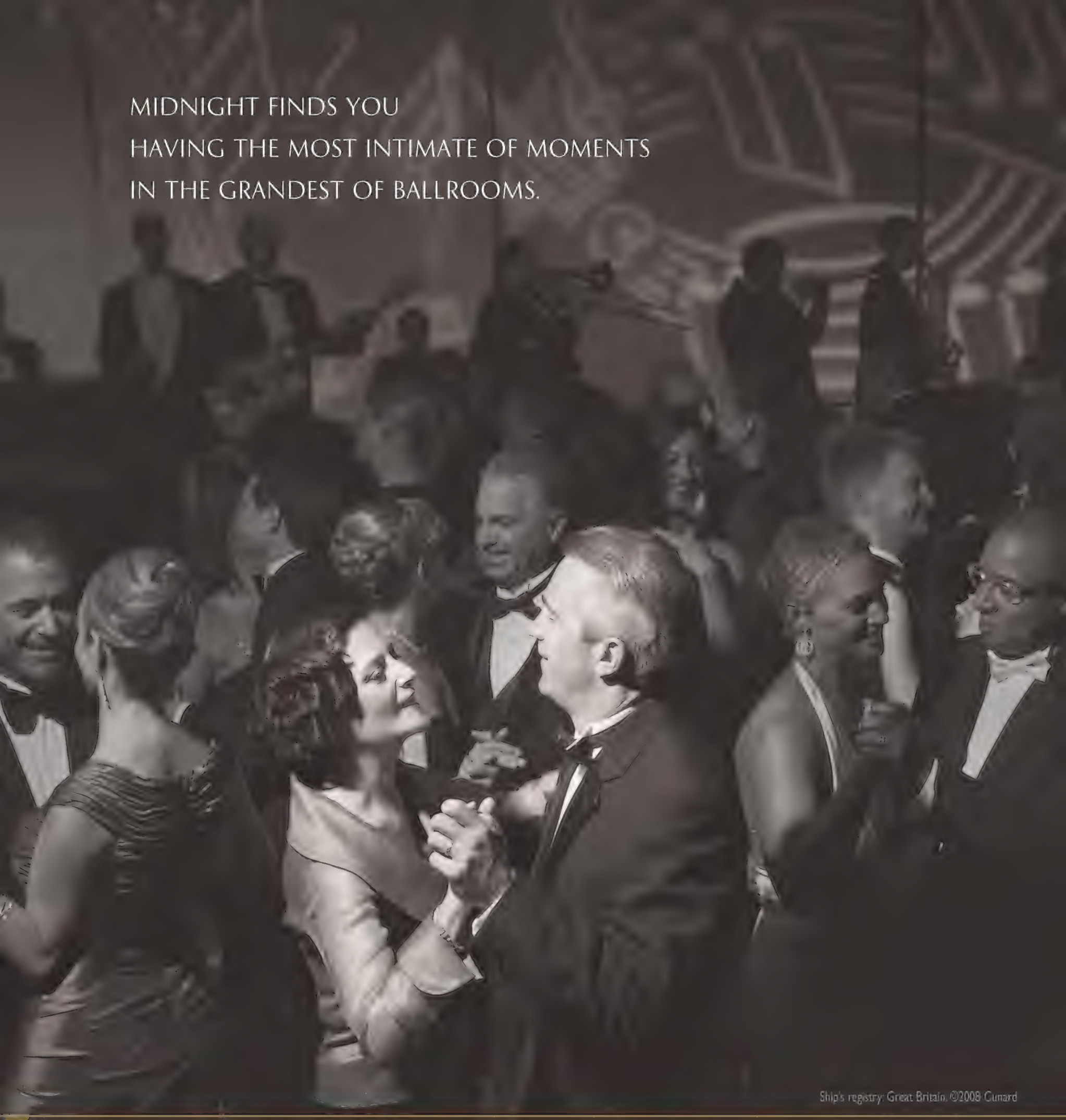
Some of them sent cherry pits home in the mail, in reference to the legendary, if apocryphal, felled tree, while others lamented that the Civil War raged even at the homestead of the nation's father.

Though the soldiers apparently appreciated the significance of where they were, they methodically tore down the house they believed was Washington's "for fuel and to assist in making comfortable the headquarters of the nearest regiments," as William Draper of the Massachusetts Infantry later recalled.

How times have changed. For the past seven years at Ferry Farm (so named for the ferry that once ran to Fredericksburg), archaeologists David Muraca and Philip Levy have been leading an effort to pinpoint the location of Washington's boyhood home. They hope the understanding they might gain from excavating the house in which our first president came

George Washington's biographers—or at least, those who have bothered to sift historical truth from such apocryphal legends as his not lying about a felled cherry tree (left)—have been able to paint his boyhood only in broad brush strokes.

ANDREW CUTRARO / AURORA SELECT; BETTMANN / CORBIS



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of age will not only shed light on a dimly understood time in his life but will also inform the structure's eventual restoration. Finally, this past July, after fruitless digs in two other locations at the site, Muraca and Levy announced they had indeed found the foundation of the farmhouse, perched atop a bluff that sweeps down to the Rappahannock. (The house the Union soldiers tore down was actually built by another owner around 1850.)

"Historians sort of pick George up at age 20," says Levy, of the University of South Florida. He is standing at the dig site, where a small army of interns and volunteers wearing "I Dig George" T-shirts are sifting soil. "Basically, the first ten pages of any Washington biography describe his childhood—and the remaining 400 pages are devoted to his time as surveyor, soldier and finally president." You can't blame the biographers for this oversight; very few documents from Washington's youth survive. "This site is the best chance to look at a detailed text," says Levy. "This is the best text we're going to get."

A bowl fragment is but one of half a million artifacts (including broken eggshells) found at the excavation site.

"This is the hardest site I've ever worked on," says Muraca. "It's as complex as an urban site," says Levy.

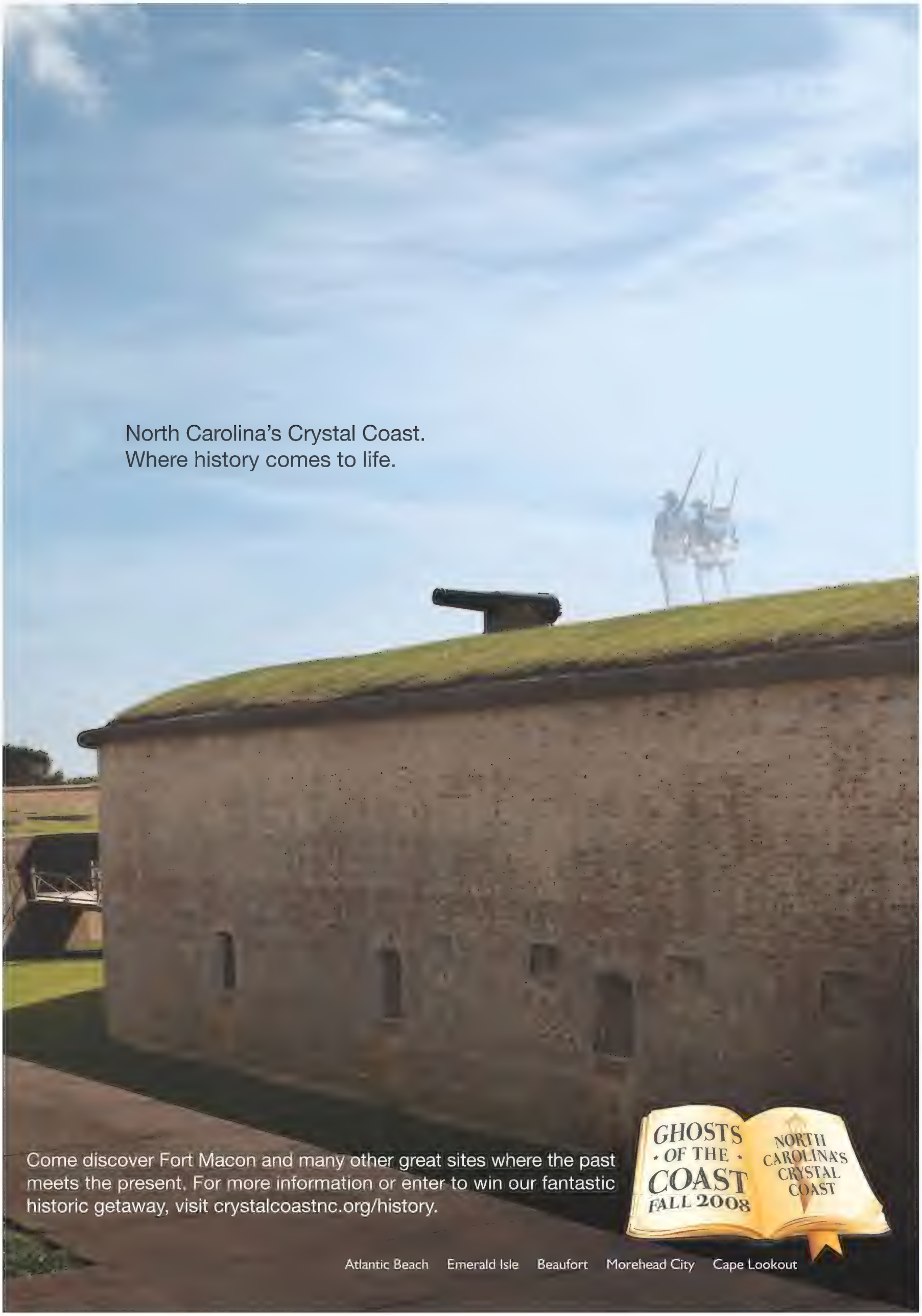
George Washington smoked here? A clay pipe from the site bears a Masonic crest.

As if finding that text weren't difficult enough, deciphering it could prove even tougher. In their years of digging, the archaeologists have uncovered the scars and traces of more than three centuries of human activity, a sort of palimpsest written in dirt and debris. "This is the hardest site I've ever worked on," says Muraca, director of archaeology for the George Washington Foundation. Five different farmsteads have occupied the Washington property since the 1700s—Washington's home was the second; the house torn down by Union soldiers was the third. A trench dug by those soldiers cuts right through the correct house's foundation at one angle, while a 20th-century drainage trench comes at it from another. What's more, each farmhouse had a number of associated outbuildings—quarters for slaves, dairy, smokehouse and kitchen. Thus, despite the quaint country road lined with Virginia fences and the river below, this is essentially "as complex as an urban site," says Levy.

Washington's biographers—or at least, those who have bothered to sift truth from legend—have been able to paint his boyhood only in broad brush strokes. We know his father, Augustine, moved the family to the site in 1738, when George was 6, probably to be closer to the iron furnace he managed. We know George's baby sister Mildred died in 1740, and two letters from family acquaintances allude to a fire on Christmas Eve that same year. And we know Washington's father died in 1743, jeopardizing the family's finances and rendering a proper English education out of reach for George, whose mother never remarried. The future president's budding career as a surveyor and soldier kept him increasingly away from Ferry Farm until 1754, when he took over as the administrator of his late brother's estate, Mount Vernon, at age 22. Beyond that, much has been guesswork.

The data being sifted from the new dig—half a million artifacts (including nails, pottery and even broken eggshells)—are adding to this knowledge. For instance, historians had been uncertain as to the extent of that Christmas Eve house fire. Muraca, Levy and their team found blistered ceramics and burnt plaster in one part of the house, but not elsewhere—indicating that while the fire must have been disruptive, it did not require massive rebuilding. But many of the artifacts raise more questions than answers: for instance, the archaeologists found a ceramic shard and oyster shell hidden in a crevice in the cellar's stone wall. A child's prank? A superstitious totem? Muraca shrugs. Other ar-

ANDREW CUTRARO / AURORA SELECT (2)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Archaeologists have discovered the traces of more than three centuries of human activity on the property.

"Facts still require us to think about them," says Brookhiser, who puzzles over the elaborate tea service.

Washington lived at Ferry Farm (an artist's rendering) from age 6 until his early 20s.

tifacts are simply exciting to behold, even if they are less mysterious. The excavators found the smoke-stained bowl of a small clay pipe, decorated with a Masonic crest. Since Washington joined the Freemasons in 1753, it is no great leap to imagine the young man stuffing tobacco into that very pipe.

The project at Ferry Farm is but one of several Washington-related sites excavated in recent years. In Valley Forge, Pennsylvania, ongoing excavation has revealed that the Continental Army under Washington's command was more active—preparing for the next clash with the British—than had been previously supposed. Continuous excavation at Mount Vernon shows Washington's entrepreneurial side. After leaving the White House, he entered the whiskey business in 1797, soon distilling up to 11,000 gallons a year. And an excavation last year of the first presidential house in Philadelphia revealed a passageway used by Washington's slaves. "George Washington is hot right now, archaeologically," says Levy.

Back at Ferry Farm, Muraca and Levy are extending the excavation to search for more outbuildings, and they anticipate collecting another half-million artifacts in the next few years. "If we do our job right, the Washington biographies will change," says Muraca.

Washington biographer Richard Brookhiser, who has written three books on the man, welcomes the information gleaned from recent digs, though he says considerable interpretive work remains to be done. "Facts still require us to think about them," he says. Brookhiser puzzles over the elaborate Wedgwood tea service the Washingtons purchased after the Christmas fire and two deaths dealt harsh blows to the family. "What did the Wedgwood mean?" Brookhiser muses. "A surprising level of prosperity? Or a grim effort to hang onto the signs of gentility at all costs?"

Ron Chernow, a biographer of Alexander Hamilton now at work on a biography of Washington, says that at the very least the discovery should help humanize the founding father by giving us "valuable shading and detail" and lifting "the story out of the realm of myth."

DAVID ZAX *is a freelance writer based in Washington, D.C.*

ANDREW CUTRARO / AURORA SELECT; L.H. BARKER © 2008

To see what other archaeologists are digging up on George Washington, go to Smithsonian.com/washingtondigs

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Brief Summary of Prescribing Information

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INDICATIONS AND USAGE
SPIRIVA HandiHaler (tiotropium bromide inhalation powder) is indicated for the long-term, once-daily, maintenance treatment of bronchospasm associated with chronic obstructive pulmonary disease (COPD), including chronic bronchitis and emphysema.

CONTRAINDICATIONS
SPIRIVA HandiHaler (tiotropium bromide inhalation powder) is contraindicated in patients with a history of hypersensitivity to atropine or its derivatives, including ipratropium, or to any component of this product.

WARNINGS
SPIRIVA HandiHaler (tiotropium bromide inhalation powder) is intended as a once-daily maintenance treatment for COPD and is not indicated for the initial treatment of acute episodes of bronchospasm, i.e., rescue therapy.

Immediate hypersensitivity reactions, including angioedema, may occur after administration of SPIRIVA. If such a reaction occurs, therapy with SPIRIVA should be stopped at once and alternative treatments should be considered.

Inhaled medicines, including SPIRIVA, may cause paradoxical bronchospasm. If this occurs, treatment with SPIRIVA should be stopped and other treatments considered.

PRECAUTIONS
General

As an anticholinergic drug, SPIRIVA (tiotropium bromide inhalation powder) may potentially worsen symptoms and signs associated with narrow-angle glaucoma, prostatic hyperplasia or bladder-neck obstruction and should be used with caution in patients with any of these conditions.

As a predominantly renally excreted drug, patients with moderate to severe renal impairment (creatinine clearance of ≤50 mL/min) treated with SPIRIVA should be monitored closely (see **CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations,** *Renally-impaired Patients*).

Information for Patients

It is important for patients to understand how to correctly administer SPIRIVA capsules using the HandiHaler inhalation device (see **Patient's Instructions for Use**). SPIRIVA capsules should only be administered via the HandiHaler device and the HandiHaler device should not be used for administering other medications. **The contents of SPIRIVA capsules are for oral inhalation only and must not be swallowed.**

Capsules should always be stored in sealed blisters. Remove only one capsule immediately before use, or its effectiveness may be reduced. Additional capsules that are exposed to air (i.e., not intended for immediate use) should be discarded.

Eye pain or discomfort, blurred vision, visual halos or colored images in association with red eyes from conjunctival congestion and corneal edema may be signs of acute narrow-angle glaucoma. Should any of these signs and symptoms develop, consult a physician immediately. Miotic eye drops alone are not considered to be effective treatment.

Care must be taken not to allow the powder to enter into the eyes as this may cause blurring of vision and pupil dilation.

SPIRIVA HandiHaler is a once-daily maintenance bronchodilator and should not be used for immediate relief of breathing problems, i.e., as a rescue medication.

Drug Interactions

SPIRIVA has been used concomitantly with other drugs commonly used in COPD without increases in adverse drug reactions. These include short-acting and long-acting sympathomimetic (beta-agonists) bronchodilators, methylxanthines, and oral and inhaled steroids. However, the co-administration of SPIRIVA with other anticholinergic-containing drugs (e.g., ipratropium) has not been studied and is therefore not recommended.

Drug/Laboratory Test Interactions

None known.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No evidence of tumorigenicity was observed in a 104-week inhalation study in rats at tiotropium doses up to 0.059 mg/kg/day, in an 83-week inhalation study in female mice at doses up to 0.145 mg/kg/day, and in a 101-week inhalation study in male mice at doses up to 0.002 mg/kg/day. These doses correspond to 25, 35, and 0.5 times the Recommended Human Daily Dose (RHDD) on a mg/m^2 basis, respectively. These dose multiples may be over-estimated due to difficulties in measuring deposited doses in animal inhalation studies.

Tiotropium bromide demonstrated no evidence of mutagenicity or clastogenicity in the following assays: the bacterial gene mutation assay, the V79 Chinese hamster cell mutagenesis assay, the chromosomal aberration assays in human lymphocytes *in vitro* and mouse micronucleus formation *in vivo*, and the unscheduled DNA synthesis in primary rat hepatocytes *in vitro* assay.

In rats, decreases in the number of corpora lutea and the percentage of implants were noted at inhalation tiotropium doses of 0.078 mg/kg/day or greater (approximately 35 times the RHDD on a mg/m^2 basis). No such effects were observed at 0.009 mg/kg/day (approximately 4 times than the RHDD on a mg/m^2 basis). The fertility index, however, was not affected at inhalation doses up to 1.689 mg/kg/day (approximately 760 times the RHDD on a mg/m^2 basis). These dose multiples may be over-estimated due to difficulties in measuring deposited doses in animal inhalation studies.

Pregnancy

Pregnancy Category C.

No evidence of structural alterations was observed in rats and rabbits at inhalation tiotropium doses of up to 1.471 and 0.007 mg/kg/day, respectively. These doses correspond to approximately 660 and 6 times the recommended human daily dose (RHDD) on a mg/m^2 basis. However, in rats, fetal resorption, litter loss, decreases in the number of live pups at birth and the mean pup weights, and a delay in pup sexual maturation were observed at inhalation tiotropium doses of ≥0.078 mg/kg (approximately 35 times the RHDD on a mg/m^2 basis). In rabbits, an increase in post-implantation loss was observed at an inhalation dose of 0.4 mg/kg/day (approximately 360 times the RHDD on a mg/m^2 basis). Such effects were not observed at inhalation doses of 0.009 and up to 0.088 mg/kg/day in rats and rabbits, respectively. These doses correspond to approximately 4 and 80 times the RHDD on a mg/m^2 basis, respectively. These dose multiples may be over-estimated due to difficulties in measuring deposited doses in animal inhalation studies.

There are no adequate and well-controlled studies in pregnant women. SPIRIVA should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Use in Labor and Delivery

The safety and effectiveness of SPIRIVA has not been studied during labor and delivery.

Nursing Mothers

Clinical data from nursing women exposed to tiotropium are not available. Based on lactating rodent studies, tiotropium is excreted into breast milk. It is not known whether tiotropium is excreted in human milk, but because many drugs are excreted in human milk and given these findings in rats, caution should be exercised if SPIRIVA is administered to a nursing woman.

Pediatric Use

SPIRIVA HandiHaler is approved for use in the maintenance treatment of bronchospasm associated with chronic obstructive pulmonary disease, including chronic bronchitis and emphysema. This disease does not normally occur in children. The safety and effectiveness of SPIRIVA in pediatric patients have not been established.

Geriatric Use

Of the total number of patients who received SPIRIVA in the 1-year clinical trials, 426 were <65 years, 375 were 65–74 years and 105 were ≥75 years of age. Within each age subgroup, there were no differences between the proportion of patients with adverse events in the SPIRIVA (tiotropium bromide inhalation powder) and the comparator groups for most events. Dry mouth increased with age in the SPIRIVA group (differences from placebo were 9.0%, 17.1%, and 16.2% in the aforementioned age subgroups). A higher frequency of constipation and urinary tract infections with increasing age was observed in the SPIRIVA group in the placebo-controlled studies. The differences from placebo for constipation were 0%, 1.8%, and 7.8% for each of the age groups. The differences from placebo for urinary tract infections were –0.6%, 4.6% and 4.5%. No overall differences in effectiveness were observed among these groups. Based on available data, no adjustment of SPIRIVA dosage in geriatric patients is warranted.

ADVERSE REACTIONS
Of the 2,663 patients in the four 1-year and two 6-month controlled clinical trials, 1,308 were treated with SPIRIVA at the recommended dose of 18 mcg once a day. Patients with narrow angle glaucoma, or symptomatic prostatic hypertrophy or bladder outlet obstruction were excluded from these trials.

The most commonly reported adverse drug reaction was dry mouth. Dry mouth was usually mild and often resolved during continued treatment. Other reactions reported in individual patients and consistent with possible anticholinergic effects included constipation, increased heart rate, blurred vision, glaucoma, urinary difficulty, and urinary retention.

Four multicenter, 1-year, controlled studies evaluated SPIRIVA in patients with COPD. Table 1 shows all adverse events that occurred with a frequency of ≥3% in the SPIRIVA group in the 1-year placebo-controlled trials where the rates in the SPIRIVA group exceeded placebo by ≥1%. The frequency of corresponding events in the ipratropium-controlled trials is included for comparison.

Table 1 Adverse Experience Incidence (% Patients) in One-Year-COPD Clinical Trials

Body System (Event)	Placebo-Controlled Trials SPIRIVA [n = 550]	Placebo [n = 371]	Ipratropium-Controlled Trials SPIRIVA [n = 356]	Ipratropium [n = 179]
Body as a Whole				
Accidents	13	11	5	8
Chest Pain (non-specific)	7	5	5	2
Edema, Dependent	5	4	3	5
Gastrointestinal System Disorders				
Abdominal Pain	5	3	6	6
Constipation	4	2	1	1
Dry Mouth	16	3	12	6
Dyspepsia	6	5	1	1
Vomiting	4	2	1	2
Musculoskeletal System				
Myalgia	4	3	4	3
Resistance Mechanism Disorders				
Infection	4	3	1	3
Moniliasis	4	2	3	2
Respiratory System (upper)				
Epistaxis	4	2	1	1
Pharyngitis	9	7	7	3
Rhinitis	6	5	3	2
Sinusitis	11	9	3	2
Upper Respiratory Tract Infection	41	37	43	35
Skin and Appendage Disorders				
Rash	4	2	2	2
Urinary System				
Urinary Tract Infection	7	5	4	2

Arthritis, coughing, and influenza-like symptoms occurred at a rate of ≥3% in the SPIRIVA treatment group, but were <1% in excess of the placebo group.

Other events that occurred in the SPIRIVA group at a frequency of 1–3% in the placebo-controlled trials where the rates exceeded that in the placebo group include: *Body as a Whole:* allergic reaction, leg pain; *Central and Peripheral Nervous System:* dysphonia, paresthesia; *Gastrointestinal System Disorders:* gastrointestinal disorder not otherwise specified (NOS), gastroesophageal reflux, stomatitis (including ulcerative stomatitis); *Metabolic and Nutritional Disorders:* hypercholesterolemia, hyperglycemia; *Musculoskeletal System Disorders:* skeletal pain; *Cardiac Events:* angina pectoris (including aggravated angina pectoris); *Psychiatric Disorder:* depression; *Infections:* herpes zoster; *Respiratory System Disorder (Upper):* laryngitis; *Vision Disorder:* cataract. In addition, among the adverse events observed in the clinical trials with an incidence of <1% were atrial fibrillation, supraventricular tachycardia, angioedema, and urinary retention.

In the 1-year trials, the incidence of dry mouth, constipation, and urinary tract infection increased with age (see **PRECAUTIONS, Geriatric Use**).

Two multicenter, 6-month, controlled studies evaluated SPIRIVA in patients with COPD. The adverse events and the incidence rates were similar to those seen in the 1-year controlled trials. The following adverse reactions have been identified during worldwide post-approval use of SPIRIVA: application site irritation (glossitis, mouth ulceration, and pharyngolaryngeal pain), dizziness, dysphagia, epistaxis, hoarseness, intestinal obstruction including ileus paralytic, intraocular pressure increased, oral candidiasis, palpitations, pruritus, tachycardia, throat irritation, and urticaria.

DOSAGE AND ADMINISTRATION
SPIRIVA capsules must not be swallowed as the intended effects on the lungs will not be obtained. The contents of the capsules are for oral inhalation only (see OVERDOSAGE section).

The recommended dosage of SPIRIVA HandiHaler (tiotropium bromide inhalation powder) is the inhalation of the contents of one SPIRIVA capsule, once-daily, with the HandiHaler inhalation device (see **Patient's Instructions for Use**).

No dosage adjustment is required for geriatric, hepatically-impaired, or renally-impaired patients. However, patients with moderate to severe renal impairment given SPIRIVA should be monitored closely (see **CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations** and **PRECAUTIONS**).

HOW SUPPLIED
The following packages are available:

carton containing 5 SPIRIVA capsules (1 unit-dose blister card) and 1 HandiHaler inhalation device (NDC 0597-0075-75)

carton containing 30 SPIRIVA capsules (3 unit-dose blister cards) and 1 HandiHaler inhalation device (NDC 0597-0075-41)

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Around the Mall

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JERRY DODRILL / AURORA / GETTY IMAGES

WHAT LIES BENEATH

MYSTERIOUS LEVIATHANS, SHAPE-SHIFTING ALGAE, GLOW-IN-THE-DARK PREDATORS!

Grapple with the wonders of the deep in the Sant Ocean Hall, opening this month at the National Museum of Natural History

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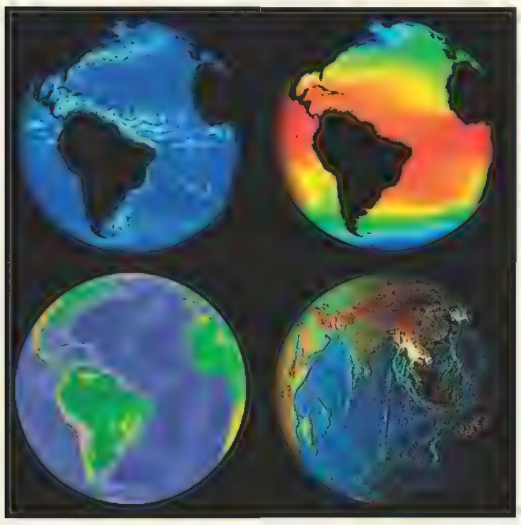
FROM THE CASTLE

Deep Science

G. WAYNE CLOUGH

AT THE RECENT SMITHSONIAN Folklife Festival, NASA astronaut Loren Shriver was asked what struck him most about Earth from space: "When you're circling the Earth every 90 minutes, what becomes clearest is that it's mostly water; the continents look like they're floating objects." We should actually think of the oceans as the *ocean*, since they are one interconnected global system. The ocean is essential to all life; it shapes our climate and weather through an intricate pattern of currents and heating and cooling mechanisms that we are only now beginning to understand. But the ocean is showing alarming strains caused by pollution, overfishing, invasive species and climate change.



"Science on a Sphere" illustrates satellite data on multiple aspects of the ocean.

These are some of the important issues that visitors to the new Sant Ocean Hall at the National Museum of Natural History will learn about. This spectacular hall will open on September 27 and will be the largest exhibition at NMNH. Benefactor (and Regents chair) Roger Sant explains that it "will help us understand the role we all can play in preserving the ocean for generations to come." Visitors will be immersed in scenes of ocean life as they watch high-definition movies on multiple screens high overhead. "Science on a Sphere" will project satellite data onto a large globe developed by the hall's major partner, the National Oceanic and Atmospheric Administration. Visitors will also join scientists on a virtual submersible tour of the deep ocean. A 45-foot model of a North Atlantic right whale will look down on a giant squid, a coral reef aquarium and a display highlighting NMNH's vast marine collections. A magnificent book with 320 pictures and 28 maps, *Smithsonian Ocean: Our Water, Our World*, by acclaimed science and nature writer Deborah Cramer, is being published in conjunction with the opening of the new hall (http://www.mnh.si.edu/exhibits/ocean_hall/).

Another new NMNH exhibition is "Dig It! The Secrets of Soil" (http://forces.si.edu/soils). A single teaspoon of soil hosts more creatures than all the humans on Earth, but less is known about the microbial world of dirt than about the dark side of the moon. The exhibit's Matters of Life and Death Theater presents a "CSI"-style detective movie that dramatizes the dynamics of life in soil. Using real Breathalyzers, visitors discover that soils actually breathe. And they learn that soils, which store more carbon than the Earth's atmosphere and all its plants, can help reduce global warming. "Chef's Challenge" features two flamboyant "soil chefs" competing to create the best soil. Visitors can even identify their "home earth" in 54 samples representing each of the U.S. states and territories. "Dig It!" continues through January 3, 2010, then travels to cities across America. I welcome you to these remarkable exhibitions about topics critical to our future as a species.

G. WAYNE CLOUGH *is Secretary of the Smithsonian Institution.*

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G. Wayne Clough

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Having a two-mile high mountain chain crowning our city provides us with more than romantic views from anywhere. It also affects our weather, giving us milder days and cooler evenings than nearby communities. Not to mention a perfect environment for shopping, outdoor dining, gallery strolls, and cycling or hiking the many and varied trails. But maybe the best thing our mountains give us is an amazing light show. For a little while every evening the setting sun is an artist, painting the mountains its own remarkable palette of golds and pinks and even crimson.

Many cities have unique structures that make their skylines distinct. In contrast to man-made icons, our distinction, our skyline, is real and natural just like the people who live here. What we've preserved in lieu of icons is a unique, rich blend of Native American, Hispanic and Western cultures shaped naturally over thousands of years.

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PHOTO: JAY BLACKWOOD

SPIRIT OF THE SEA

TLINGIT ARTISANS CRAFT A CANOE THAT EMBODIES THEIR CULTURE'S OCEANGOING PAST

To craft the vessel (below: embarking on its maiden voyage), Doug Chilton (left) made cuts along the length of the canoe with a chain saw, axed out the splintering chunks, then steamed the vessel to curve up the ends.

ON THE MORNING OF JUNE 19, a crowd gathered in Washington, D.C. to watch a boat plying the Potomac. The distinctively carved canoe bulged with eight paddlers sitting two abreast, while a coxswain beat a drum to keep stroke. "Who are you, and what are you doing here?" shouted a man on shore as the boat began to dock. "We are the Tlingit, Haida and Tsimshian," a paddler responded, reciting the names of Northwest Coast Indian tribes.

Its maiden voyage complete, the 26-foot dugout canoe, named the *Yéil Yeik* (Raven Spirit), is now suspended from the ceiling in the Sant Ocean Hall, which opens September 27 at the Natural History Museum. "Human life on earth has in many ways been a response to the challenges of the ocean world," says anthropologist and curator Stephen Loring. The canoe is a "uniquely American watercraft and a powerful symbol of human ingenuity and accomplishment."

For the Northwest Coast Indians—who inhabit the offshore islands and jagged coastline extending from the Oregon-Washington border to Yakutat Bay in the southeastern Alaskan panhandle—the canoe enabled them to avoid geographic isolation. "Our people couldn't be who we are and where we are without the canoe," says Tlinglit elder Clarence Jackson. Indeed, archaeological findings suggest a complex maritime culture at least 10,000 years old.

The Tlingit learned to subsist on the ocean. "When the tide goes out, our table is set" is a common refrain. But despite this intimate connection with the sea, canoe-building fell into decline during the past century. "Everybody had a knack for hewing out a canoe," says Jackson, of the pre-1920 era. Motorboats have since replaced traditional canoes.

But a few Tlingit artisans, such as Doug Chilton, have sparked a revival. The Native-owned Sealaska Corporation donated a 350-year-old red cedar tree to the Raven Spirit project. Traditionally, carvers would dig a trough down the center of the canoe, light a fire, let it burn awhile and then knock out the charred areas with an ax. To ease their labors, Chilton and his fellow artisans, including his brother Brian, used chain saws. Once hewed, the canoe was steamed, in the manner used by their ancestors, to expand the sides and curve up the ends.

As a finishing touch, they mounted a figurehead of a raven with a copper sun in its beak—to represent the Tlingit legend of the raven bringing light to the world. As if to remind those involved of the spirits at work in the project, a raven, distinguished by a broken wing that forced its feathers to stick straight out, visited Chilton several times while he was working.

"He was almost claiming ownership of the canoe," says Chilton. To honor the wounded raven, Chilton whittled its tousled wing into the figurehead. "The spirit of that raven was there in that canoe." MEGAN GAMBINO

MOMENT OF DISCOVERY Legend has it that the Greek mathematician Archimedes ran naked in the streets shouting "Eureka!" when, in his bath, he came up with a way to measure the purity of gold. While most modern scientists keep their clothes on, their enthusiasm for discovery remains unabated. "It's exploding like an egg!" exclaims William Chadwick Jr. of Oregon State University as he watches the first-ever video of an erupting underwater volcano, NW Rota-1. Chadwick, along with a team from the National Oceanic and Atmospheric Administration (co-sponsors of the new Ocean Hall), used a remote camera to record this 2006 event. To hear Chadwick's eureka moment and see the video that inspired it, visit Smithsonian.com/jukebox. ANIKA GUPTA

MARK KELLEY / SEALASKA HERITAGE INSTITUTE; JACQUELYN MARTIN / AP IMAGES; NOAA PHOTO LIBRARY

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THE OBJECT AT HAND

Cetacean Model

NATIONAL MUSEUM OF NATURAL HISTORY

TRUE TO FORM

An exact replica represents a particular North Atlantic whale

BY OWEN EDWARDS

J. SCOTT APPLEWHITE / AP IMAGES

GAZING UP AT AN amazingly lifelike 45-foot-long right whale, visitors to the new Sant Ocean Hall at the National Museum of Natural History (NMNH) may get the idea they are about to become the marine mammal's snack. But right whales feed on plankton, so there's no need to worry. Plus, this one's made of vinyl urethane, requiring occasional dusting but no food whatsoever.

Uniquely, the NMNH's whale model boasts a living, breathing counterpart swimming the seas right now. That creature, dubbed Phoenix by scientists who began tracking her movements by aerial and nautical surveys soon after her birth in 1987, is already a grandmother. She is the most studied of the nearly 400 right whales that inhabit the western part of the North Atlantic.

"Right whales are closely monitored by the Right Whale Consortium," says James Mead, curator of marine mammals at the museum. "The species was hunted widely as far back as the 16th century, continuing through the early 1900s, and their population was extremely reduced. So we can keep careful track of their numbers." (The name right whale may derive from the species' abundant blubber, which made it highly desirable, or "just right.")

Individual whales can be identified by their scars and callosities (white patches on the skin). Sightings are frequent because right whales, which summer in Nova Scotia's Bay of Fundy and winter off the southeastern United States, follow regular migration patterns. They also tend to follow deep-water shipping lanes, where plankton is plentiful. "Every photograph made of a right whale from ships," Mead says, "is another data point. The uniqueness of each whale's markings makes it possible to know quite a lot about an individual like Phoenix."

As any student of Egyptian mythology knows, the phoenix is a bird that rises from its own ashes. It may seem odd to confer that name on a seagoing creature with a blowhole instead of a beak—and little likelihood of bursting into flames. But Phoenix got her name after a near-fatal encounter. "She was tangled in fishing line and seemed to be crashing," Mead says. "Then, somehow, she got herself untangled."

Originally, Mead and his colleague, Charles Potter, had wanted the new exhibit to feature a female blue whale with a 24-foot-long newborn calf, but fire and safety regulations wouldn't permit so large an installation. "Then the right whale became a topic, a smaller and extremely interesting whale," Mead says. "The question was, which right whale? And suddenly someone brought up Phoenix."

See a gallery of images of the real Phoenix at www.Smithsonian.com/phoenix

Showing up at an artist's studio for a sitting is not something one can reasonably ask of a whale. But because Phoenix is something of a celebrity in scientific circles, she has an abundant photographic portfolio. In the NMNH model, her distinguishing marks, even her whiskers, have been meticulously reproduced.

The faithful replica is the work of Terry Chase and his associates at Chase Studio on Bull Shoals Lake in southern Missouri. A designer and builder of museum exhibits, Chase has crafted thousands of models for scores of clients around the world. Phoenix posed special challenges: the monstrous whale had to fit through the museum's

Scientists' images of Phoenix (with a calf) allow researchers, says the NMNH's Mead, to "know quite a lot" about her.

16-foot-tall doors and be light enough to hang from the ceiling. Working with 1/12th-scale models and consulting with biologists from the New England Aquarium and marine mammal specialists at NMNH, Chase and his fellow artists labored on the model for three years. "We had measurements from beached right whales; every little detail is true to photographs of Phoenix."

Phoenix features an interior structure of metal supports and cables, described by its creator as "spidery." The seven sections, sheathed in vinyl urethane, are joined so invisibly that a cosmetic surgeon would be proud to claim the work.

"At 2,700 pounds, the whole model weighs less than the jawbone of an actual right whale," Chase says. "It's the most accurate whale model ever done."

OWEN EDWARDS *is a freelance writer and author of the book* Elegant Solutions.

ANDREW CUTRARO / AURORA SELECT; JESSICA TAYLOR / NEW ENGLAND AQUARIUM; ED ROBINSON / PHOTOLIBRARY

Q&A

Renowned coral reef biologist **NANCY KNOWLTON** was recently appointed to the Smithsonian's Sant Chair for Marine Science. She will lead the Institution's effort to foster a greater public understanding of the world's oceans. The magazine's Beth Py-Lieberman spoke with her.

WHAT THREATENS CORAL REEFS TODAY? One culprit is overfishing, which wipes out a lot of herbivores. As a result, seaweed grows and smothers the corals. The second is declining water quality, caused by toxic materials and fertilizers that run off the land. The third is greenhouse gas emissions—especially carbon dioxide—which not only make the oceans too warm for reefs but also change the chemistry of the water, making it more acidic. And the more acidic the water, the harder it is for corals to deposit the skeletal structures that form the bulk of the reef.

ARE THESE CHANGES A DEATH KNELL? In the Caribbean alone over the last three decades we've lost 80 percent of all corals. This is a level of destruction that rivals the devastation of tropical rain forests. If people don't change the way they're doing things, reefs as we know them will be gone by the year 2050.

WHAT WOULD THE WORLD BE LIKE WITHOUT CORAL REEFS? About a quarter of all marine species live on coral reefs. These species are a source of food, tourism income and potential biopharmaceutical products, including cancer drugs. Reefs also provide incredibly important shoreline protection against hurricanes and tsunamis.

Visit Smithsonian.com/knowlton to read more of our interview with Nancy Knowlton

MOST LIKELY TO...

In the Ocean Hall some 100 sea creatures reside preserved in glass jars. Each specimen has its own unique traits, and together the collection represents the vast diversity of sea life. Here is a quick guide to the standouts of the "Ocean Hall Class of 2008."

MOST LIKELY TO GET AHEAD
The monkfish, whose head makes up 75 percent of its body.

MOST LIKELY TO STICK IT TO THE MAN
Cone shells. These mollusks inject their unsuspecting prey with a fast-acting poison.

BEST ACCESSORIZED
The Johnson's black anglerfish, which lures prey into its mouth with a small phosphorescent light that dangles from its forehead.

MOST COLORFUL CHARACTER
Flatworms. These sluglike invertebrates come in a host of brilliant hues and patterns.

MOST LIKELY TO GO PLACES
The purple bubble raft snail, which drifts on a dinghy of self-created bubbles.

MOST DOWN AND DIRTY
Acorn worms, which burrow in sand, sediment and mud. Some are as long as eight feet.

MOST LIKELY TO STAR IN A HORROR MOVIE
The giant sea spider, whose long mouthpart sucks the tissue out of its invertebrate prey.

BEST HOLIDAY SPIRIT
The Christmas tree worm, which extends pine-tree-like plumes to eat and breathe.

ANIKA GUPTA

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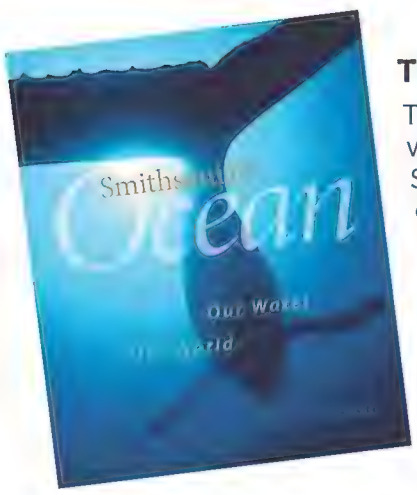
What's Up

EXCLUSIVE SCREENING

The Puerto Rican government created silk-screen posters in 1947 (right) to advertise pro-democracy films. View posters and movies at the S. Dillon Ripley Center, September 17.



TRUE BLUE

Travel through time with the new Smithsonian book *Ocean*, which traces the history of life over millions of years, from oxygen-producing bacteria to humanity's conquest of the seas.

TWO IF BY SEA

Painter Dwight Tryon and photographer Hiroshi Sugimoto had one thing in common: love of the ocean. See Tryon's 1900s pastels (below: "Sunrise") alongside Sugimoto's 1980s photos at the Sackler Gallery until January 25.

KEEPING HOUSE

Ever wonder who dusts the president's desk? Get a glimpse at the inner workings of the White House (below: rolling up the Blue Room rug) in a traveling exhibit beginning September 6 at the State Historical Society of Iowa.

VARIATIONS ON A SCENE

Georgia O'Keeffe livened up America's landscape with bright colors and tones (below: "Out Back of Marie's II"). Images by visionary photographer Ansel Adams complement her works. Opens at American Art on September 26.

BY ANIKA GUPTA

VISIT THE SMITHSONIAN For a free Associates' planning packet, call 202 633-1000 or 202 357-1729 (TTY), 9 a.m. to 5 p.m. Monday through Friday and 9 a.m. to 4 p.m. Saturday. Or send an e-mail to info@si.edu. The Smithsonian Information Center in the Castle is open daily, 8:30 a.m. to 5:30 p.m. Members can visit the reception desk between 9 a.m. and 4 p.m. to register for a behind-the-scenes tour and to hear about membership benefits. Most museums are open daily, 10 a.m. to 5:30 p.m. All museums are closed December 25.

For an insider's look at the Smithsonian, visit Smithsonian.com/mallblog

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Photo: Courtesy Blue Ridge Institute & Museum

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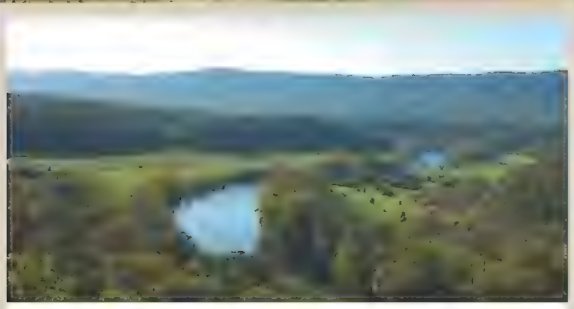

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- ● = Smithsonian Institution
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- ■ = Offer valid on Sunday, September 28, 2008

Alabama

- ○ **Anniston Museum of Natural History**
- ○ **Birmingham Civil Rights Institute**
- Kentuck Museum Association
- Montgomery Museum of Fine Arts
- Pioneer Museum of Alabama
- Sloss Furnaces National Historic Landmark
- ○ **U.S. Space & Rocket Center**
- University of Alabama Museum of Natural History
- USS ALABAMA Battleship Memorial Park
- Veterans Memorial Museum

Alaska

- Seward Museum
- Valdez Museum

Arizona

- ○ **Arizona Historical Society Museum at Papago Park**
- ○ **Arizona History Museum of the Arizona Historical Society**
- ○ **Arizona State Museum**
- ○ **Bisbee Mining & Historical Museum**
- ○ **Challenger Space Center**
- Desert Botanical Garden
- International Wildlife Museum
- Mesa Historical Museum
- Pueblo Grande Museum and Archaeological Park
- ○ **Sharlot Hall Museum**
- The Bead Museum
- The Phoenix Zoo

Arkansas

- Arkansas Railroad Museum
- Arts and Science Center for Southeast Arkansas
- Old Independence Regional Museum

California

- ○ **Aerospace Museum of California**
- ○ **Agua Caliente Cultural Museum**
- Amador County Museum
- American Museum of Ceramic Art
- Bakersfield Museum of Art
- Bedford Gallery
- ○ **Blackhawk Museum**
- California Center for the Arts, Escondido Museum
- ○ **California Science Center**
- California State Military Museum and Resource Center
- Casa de la Guerra Historic House Museum
- ○ **Chabot Space & Science Center**
- Children's Discovery Museum of the Desert
- COPIA: The American Center for Wine, Food & the Arts
- Coyote Point Museum for Environmental Education
- Craft and Folk Art Museum
- Dr. Willella Howe-Waffle House and Medical Museum
- El Presidio de Santa Barbara State Historic Park
- Exploratorium
- Fowler Museum at UCLA
- Fullerton Museum Center
- Hiller Aviation Museum
- Historic Mission San Juan Capistrano
- Huntington Beach International Surfing Museum
- J. Paul Getty Museum
- ■ Los Angeles Museum of the Holocaust
- Maidu Interpretive Center
- ○ **Millard Sheets Center for the Arts**
- Morris Graves Museum of Art
- Museum of Contemporary Art San Diego
- Museum of Craft and Folk Art
- ○ **Museum of Latin American Art (MOLAA)**
- Museum of Making Music
- Museum of San Diego History
- Museum of the African Diaspora (MoAD)
- Museum of Ventura County
- Old Courthouse Museum
- Peninsula Museum of Art
- Point Fermin Lighthouse
- Robert V. Fullerton Art Museum
- ○ **Ronald Reagan Presidential Library and Museum**
- S.C.R.A.P. Gallery - The Art Museum for the Environment
- Sacramento Zoo
- San Bernardino County Museum
- ○ **San Diego Air & Space Museum**
- San Diego Archaeological Center
- San Dieguito Heritage Museum
- Santa Monica Museum of Art
- Skirball Cultural Center
- The Adobe Chapel Museum
- The California Museum for History, Women and the Arts
- The Pasadena Museum of California Art
- The Whaley House Museum
- Tuolumne City Memorial Museum
- Turtle Bay Exploration Park
- Tustin Area Museum
- University Art Museum
- Watts Towers Arts Center
- Western Hotel Museum
- William Heath Davis House

Colorado

- Aspen Art Museum
- Boulder History Museum
- Colorado Springs Fine Arts Center
- Cripple Creek District Museum
- Denver Botanic Gardens
- Denver Museum of Miniatures, Dolls and Toys
- Gallery of Contemporary Art
- ○ **Littleton Historical Museum**
- Luther Bean Museum
- World Figure Skating Museum & Hall of Fame

Connecticut

- Bruce Museum
- Bush-Holley Historic Site
- Children's Museum of Southeastern Connecticut
- Connecticut Historical Society
- Earthplace, The Nature Discovery Center
- Fairfield Museum and History Center
- Florence Griswold Museum
- Hill-Stead Museum
- Lyman Allyn Art Museum
- ○ **Mashantucket Pequot Museum and Research Center**
- ○ **Skitch Henderson Museum**
- The Aldrich Contemporary Art Museum
- The Children's Museum
- The Golden Age of Trucking Museum
- The Slater Memorial Museum
- Yale University Peabody Museum of Natural History

Delaware

- Delaware Agricultural Museum & Village
- Delaware Art Museum
- Delaware Center for the Contemporary Arts
- Delaware Historical Society
- New Castle Historical Society
- Old Swedes Church-Hendrickson House Museum
- Treasures of the Sea Exhibit

District of Columbia

- Anderson House - The Society of the Cincinnati
- Decatur House Museum
- Dumbarton Oaks Museum & Dumbarton Oaks Gardens
- Marian Koshland Science Museum of the National Academy of Sciences
- National Archives Experience
- Rock Creek Park Nature Center
- Sewall-Belmont House and Museum
- ● **Smithsonian American Art Museum**
- ● **Smithsonian Hirshhorn Museum and Sculpture Garden**
- ● **Smithsonian National Museum of Natural History**
- ● **Smithsonian National Postal Museum**
- ● **Smithsonian National Zoological Park**
- The Kreeger Museum
- Woodrow Wilson House

Florida

- Ah-Tah-Thi-Ki Museum

New museum listings are updated daily. Visit www.Smithsonian.com/MuseumDay

Albin Polasek Museum & Sculpture Gardens
Art and Culture Center of Hollywood
Boca Raton Museum of Art
Camp Gordon Johnston WWII Museum
City of Fort Walton Beach Heritage Park & Cultural Center
Colonial Spanish Quarter Museum
Cracker Country
Florida Air Museum
G.WIZ—The Science Museum
Harry S. Truman Little White House Museum, State Historic Site
Heritage House Museum and Robert Frost Cottage
Historic Spanish Point
Historical Museum of Southern Florida
Leepa-Rattner Museum of Art
Lighthouse Center for the Arts
Lowe Art Museum
Maitland Historical Museum and Telephone Museum
Miami Art Museum
Miami Metrozoo
❍ **Miami Science Museum**
❍ **Museum of Arts & Sciences**
Museum of Contemporary Art Jacksonville
Museum of Contemporary Art, North Miami
Museum of Florida Art
National Naval Aviation Museum
National Navy SEAL Museum
North Brevard Historical Museum
Orlando Science Center Florida
Pensacola Historical Museum
Richard and Pat Johnson Palm Beach County History Museum
Ritz Theatre & LaVilla Museum
Seminole Ah-Tah-Thi-Ki Museum
T.T. Wentworth, Jr. Florida State Museum
Tallahassee Museum
The Cummer Museum of Art & Gardens
The Frost Art Museum
❍ **The Mary Brogan Museum of Art and Science**
The Wolfsonian—FIU
Vizcaya Museum and Gardens
Waterhouse Residence Museum

Georgia

1797 Ezekiel Harris House
Augusta Museum of History
Barrington Hall
❍ **Booth Western Art Museum**
Boyhood Home of President Woodrow Wilson
❍ **CDC/Global Health Odyssey Museum**
Center for Puppetry Arts
Georgia Sports Hall of Fame
Gertrude Herbert Institute of Art
❍ **High Museum of Art**
Madison Museum of Fine Art
Marietta Museum of History
Moore Methodist Museum and Library
❍ **Morris Museum of Art**
❍ **Museum of Arts and Sciences**
National Science Center's Fort Discovery
Pebble Hill Plantation
❍ **Southern Museum**
❍ **Telfair Museum of Art**
The Bartow History Center
Thronateeska Heritage Center

Hawaii

Bishop Museum
Hawaii Maritime Center
Manoa Heritage Center
Mission Houses Museum
Pacific Aviation Museum
Queen Emma Summer Palace
Tropic Lightning Museum
University of Hawaii Art Gallery

Idaho

Idaho Botanical Garden
Museum of North Idaho

Illinois

Balzekas Museum of Lithuanian Culture
DuSable Museum of African American History
Freedom Museum
Galena History Museum
Gardner Museum of Architecture and Design
Hinsdale History Museum
International Museum of Surgical Science
Intuit: The Center for Intuitive and Outsider Art
Joliet Area Historical Museum
❍ **Krannert Art Museum and Kinkead Pavilion**
❍ **Lakeview Museum of Arts & Sciences**
Mitchell Museum of the American Indian
Parkland Art Gallery
Peggy Notebaert Nature Museum
Quincy Art Center
Quincy Museum
Smart Museum of Art
Spurlock Museum
Swedish American Museum
The Children's Museum in Oak Lawn

Indiana

Ball State University Museum of Art
Carnegie Museum of Montgomery County
Conner Prairie
Gary Land Company History Museum
General Lew Wallace Study and Museum
Gruenewald Historic House
Historic New Harmony
Howard Steamboat Museum & Mansion
Lake of the Red Cedars Museum
Lane Place
Lubeznik Center for the Arts
Marshall County Historical Museum
Midwest Museum of American Art
Muncie Children's Museum
Old Jail Museum
President Benjamin Harrison Home
Studebaker National Museum
The College Football Hall of Fame
The Great Lakes Museum of Military
The Museum Of Miniature Houses and Other Collections

Iowa

Amana Heritage Museum
Brunnier Art Museum
Cedar Rapids Museum of Art
Christian Petersen Art Museum
Farm House Museum
Madison County Historical Complex
Muscatine Art Center
Museum of Religious Arts
❍ **National Mississippi River Museum & Aquarium**
National Sprint Car Hall of Fame and Museum
Terrace Hill
The Danish Immigrant Museum
The Iowa Children's Museum
University of Iowa Athletics Hall of Fame and Museum

Kansas

Birger Sandzén Memorial Gallery
Botanica, The Wichita Gardens
Dwight D. Eisenhower Presidential Library and Museum
Exploration Place
Fick Fossil & History Museum
Gardner Museum and Historical Society
Harvey County Historical Museum & Archives
Johnson County Museums
Kansas Aviation Museum
❍ **Kansas Cosmosphere & Space Center**
Kansas Museum of History
Kansas Sports Hall of Fame
Kauffman Museum
Lake Afton Public Observatory
Lowell D. Holmes Museum of Anthropology
Lyon County Historical Museum
Mid-America All-Indian Center, Inc.
Morton County Historical Society
Old Cowtown Museum
Salina Art Center
Stauth Memorial Museum
U. S. Cavalry Museum
Ulrich Museum of Art
Watkins Community Museum of History
Wichita Art Museum
Wichita Center for the Arts
Wichita-Sedgwick County Historical Museum

Kentucky

❍ **Headley-Whitney Museum**
Historic Locust Grove
Liberty Hall Historic Site
Louisville Slugger Museum & Factory
Perryville Battlefield State Historic Site Museum
University of Kentucky Art Museum

Louisiana

African-American Museum of St. Martinville
Contemporary Arts Center
Lafayette Natural History Museum & Planetarium
Louisiana Children's Museum
LSU Museum of Art
Masur Museum of Art
New Orleans Pharmacy Museum
❍ **Ogden Museum of Southern Art**
Paul and Lulu Hilliard University Art Museum
❍ **The National World War II Museum**
West Baton Rouge Museum

Maine

19th Century Willowbrook Village
Bowdoin College Museum of Art
Brick Store Museum
Burnham Tavern Museum
Jonathan Fisher House
L.C.Bates Museum
Maine State Museum
Museums of Old York
Portland Harbor Museum
Portland Museum of Art
The Telephone Museum
University of Maine Museum of Art
Wendell Gilley Museum
Wilson Museum

Maryland

American Visionary Art Museum
❍ **B&O Railroad Museum**
Brookside Gardens
Calvert Marine Museum
Carroll Museums, Inc.
Chesapeake Children's Museum
❍ **College Park Aviation Museum**
Evergreen Museum & Library
Havre de Grace Maritime Museum
Historic St. Mary's City
Historical Electronics Museum
Homewood Museum
Ladew Topiary Gardens
Maryland Historical Society (MdHS)
Montgomery County Historical Society
Mount Clare Museum House
❍ **National Museum of Dentistry**
Ocean City Life-Saving Station Museum
Piney Point Lighthouse Museum and Historic Park
❍ **Reginald F. Lewis Museum of Maryland African American History & Culture**
Sandy Spring Museum
Schifferstadt Architectural Museum
St. Clement's Island Museum
The Children's Museum of Rose Hill Manor Park
The Star-Spangled Banner Flag House
Ward Museum of Wildfowl Art

Massachusetts

Armenian Library and Museum of America
Berkshire Museum
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Blue Hills Trailside Museum
Buckman Tavern
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Higgins Armory Museum
Historic New England Otis House Museum
JFK Presidential Library and Museum
Lowell National Historical Park
Mead Art Museum | Amherst College
Museum of Fine Arts, Boston
Museum of Science, Boston
New Bedford Whaling Museum
New England Quilt Museum
Old Colony Historical Society
Old South Meeting House
Peabody Museum of Archaeology and Ethnology
Springfield Museums
Sterling and Francine Clark Art Institute
The Discovery Museums
The George Peabody House Museum
Tower Hill Botanic Garden
Willard House and Clock Museum

Michigan

Air Zoo
Besser Museum for Northeast Michigan
Detroit Historical Museum
Fernwood Botanical Garden and Nature Preserve
Frankenmuth Historical Association Museum
Kalamazoo Institute of Arts
Krasl Art Center
Matthaei Botanical Gardens
Meadow Brook Hall and Gardens
Music House Museum
Muskegon Museum of Art
National Miniatures Trust Museum
Paine-Gillam-Scott Museum
Saginaw Art Museum
University of Michigan Museum of Art—UMMA Off/Site

Minnesota

Carver County Historical Society
Gibbs Museum of Pioneer and Dakotah Life
Marjorie McNeely Conservatory
Minneapolis Institute of Arts
Minnesota Landscape Arboretum
Minnesota Zoo
Stearns History Museum

Mississippi

Mississippi Craft Center
Mississippi Museum of Art
Ohr-O'Keefe Museum of Art
Tupelo Automobile Museum
Union County Heritage Museum

Missouri

Albrecht-Kemper Museum of Art
American Jazz Museum
American Presidents Museum
Campbell House Museum
Daum Museum of Contemporary Art
Eugene Field House & St. Louis Toy Museum
Kemper Museum of Contemporary Art
Mark Twain Boyhood Home & Museum
Museum of Art and Archaeology
National Military Heritage Museum
National World War I Memorial Museum
Pony Express National Museum
Powers Museum of Carthage History
Robidoux Row Museum
Saint Louis Art Museum
Saint Louis Science Center
Society of Memories Doll Museum
St. Joseph Museums, Inc./Glore Psychiatric Museum
The Fire Museum

Montana

Daly Mansion
Missoula Art Museum
Montana Historical Society
Ravalli County Museum
Western Heritage Center
Yellowstone Art Museum

Nebraska

Joslyn Art Museum
Lincoln County Historical Museum
Museum of Nebraska Art
Strategic Air & Space Museum
The Durham Museum
Webster County Historical Museum

Nevada

Atomic Testing Museum
Las Vegas Natural History Museum
Lost City Museum
National Automobile Museum (The Harrah Collection)
Nevada Northern Railway National Historic Landmark
Nevada State Museum

New Hampshire

Aviation Museum of New Hampshire
Franconia Heritage Museum
Squam Lakes Natural Science Center
The Fort at No. 4 Living History Museum

New Jersey

Air Victory Museum
American Labor Museum
Camden County Historical Society
Hiram Blauvelt Art Museum
Morris Museum
Museum of Early Trades & Crafts
Old Barracks Museum
Reeves-Reed Arboretum
The New Jersey Historical Society
The Newark Museum
The Stickley Museum at Craftsman Farms

New Mexico

El Rancho de las Golondrinas Living History Museum
Georgia O'Keeffe Museum
Geronimo Springs Museum
Museums at Ghost Ranch
Pioneer Store Museum
Wheelwright Museum of the American Indian

New York

Adirondack Museum
Alley Pond Environmental Center
American Folk Art Museum
Amherst Museum
Bartow-Pell Mansion Museum
Brookside Museum
Cathedral Church of Saint John the Divine
Chemung Valley History Museum
Chenango County Historical Society
Children's Museum of Manhattan
Coe Hall
Cold Spring Harbor Whaling Museum
Cortland County Historical Society
Cuba Cheese Museum
Edward Hopper House Art Center
Erie Canal Discovery Center
Everson Museum of Art
FASNY Museum of Firefighting
Flushing Town Hall
Frederic Remington Art Museum
Genesee Country Village & Museum
George Eastman House
Gomez Mill House Museum and Historic Site
Guild Hall
Hanford Mills Museum
Herbert F. Johnson Museum of Art
Herschell Carrousel Factory Museum
Historic Huguenot Street: Where an American Story Unfolds
Historic Richmond Town
Hofstra University Museum
Holland Land Office Museum
Jamaica Center for Arts & Learning
Katonah Museum of Art
Long Island Museum of American Art, History & Carriages
Mabee Farm Historic Site
Memorial Art Gallery of the University of Rochester
Montauk Point Lighthouse Museum
Mount Vernon Hotel Museum & Garden
Museum of the Earth
National Memorial Day Museum
National Museum of Racing and Hall of Fame
National Purple Heart Hall of Honor
New York City Fire Museum
New York State Museum
New York Transit Museum
Northport Historical Society
Olana State Historic Site
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Oneida Community Mansion House
Oneida County Historical Society
Orangetown Historical Museum and Archives
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The Col. Wm. Bond-Jesse Hawley House
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The Fenton History Center Museum and Research Center
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The Museum at FIT
The Noble Maritime Collection
The Skyscraper Museum
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The Ukrainian Museum
USS SLATER Destroyer

North Carolina

Asheville Art Museum
Beaufort Historic Site
Charlotte Museum of History
Duke Homestead State Historic Site
Fascinate-U Children's Museum
Fort Dobbs State Historic Site
Frisco Native American Museum & Natural History Center
Greensboro Historical Museum
High Point Museum
Mint Museum of Art
Mint Museum of Craft + Design
Murfreesboro Historic District and the Brady C. Jefcoat Museum of Americana
Museum of Anthropology
North Carolina Museum of History
Old Salem Museums & Gardens
President James K. Polk State Historic Site
Rankin Museum of American Heritage
The Whalehead Club
Western North Carolina Air Museum

North Dakota

Lewis & Clark Interpretive Center/ Fort Mandan

Ohio

Betts House
Cleveland Museum of Natural History

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Garst Museum & The Annie Oakley Center
Greene County Ohio Historical Society
Museum of Contemporary Art Cleveland (MOCA)
Oberlin Heritage Center
Rock and Roll Hall of Fame and Museum
The Children's Museum of Cleveland
The Dayton Art Institute
The Stone Academy
Wexner Center for the Arts
Xavier University Art Gallery

Oklahoma

Confederate Memorial Museum & Cemetery
Gilcrease Museum
Mabee-Gerrer Museum of Art
❍ **Oklahoma History Center**
❍ **Science Museum Oklahoma**
Will Rogers Birthplace Ranch
Will Rogers Memorial Museum

Oregon

Architectural Heritage Center
Oregon History Museum
Rice Northwest Museum of Rocks and Minerals
Tamástslikt Cultural Institute
University of Oregon Museum of Natural and Cultural History
World Forestry Center Discovery Museum

Pennsylvania

1758 Moravian Sun Inn
Allentown Art Museum
American Philosophical Society Museum
Bayernhof Museum
Bucks County Civil War Library and Museum
Clinton County Historical Society/ Heisey Museum
Compass Inn Museum
Erie Art Museum
Fireman's Hall Museum
Frick Art & Historical Center
Glencairn Museum
❍ **Historic Bethlehem**
Historic St. George's
Lancaster Museum of Art
Lehigh Valley Heritage Museum
National Liberty Museum
National Watch & Clock Museum
Northampton County Historical & Genealogical Society
Old Economy Village
Palmer Museum of Art
Philadelphia Art Alliance
Phipps Conservatory and Botanical Gardens
Photo Antiquities
Rosenbach Museum & Library
❍ **Senator John Heinz History Center**
The Academy of Natural Sciences
❍ **The African American Museum in Philadelphia**
The Everhart Museum of Natural History, Science & Art
The Print Center
University of Pennsylvania Museum of Archaeology and Anthropology

Puerto Rico

❍ **Museo de Arte de Puerto Rico**

Rhode Island

Culinary Arts Museum
Fine Arts Center Galleries
Governor Sprague Mansion

South Carolina

Aiken Thoroughbred Racing Hall of Fame & Museum
Columbia Museum of Art
❍ **Historic Brattonsville**
Horry County Museum
Lexington County Museum
Museum & Gallery at Bob Jones University and at Heritage Green
❍ **Museum of York County**
❍ **South Carolina State Museum**
The Old Exchange & Provost Dungeon
The Rice Museum

South Dakota

Adams Museum
Akta Lakota Museum & Cultural Center
Historic Adams House
Indian Museum of North America
National Presidential Wax Museum
Old Courthouse Museum of Sioux Falls
Pettigrew Home & Museum
South Dakota State Agricultural Heritage Museum
The Kirby Science Discovery Center at the Washington Pavilion of Arts and Science

Tennessee

❍ **American Museum of Science and Energy**
Biblical Resource Center & Museum
Frist Center for the Visual Arts
Historic Mansker's Station
Marble Springs State Historic Farmstead
McMinn County Living Heritage Museum
❍ **Memphis Rock 'n' Soul Museum**
Tennessee State Museum

Texas

Ace of Clubs House
Amon Carter Museum
Blanton Museum of Art
Brazos Valley Museum of Natural History
Buffalo Soldiers National Museum
Carson County Square House Museum
Chihuahuan Desert Nature Center & Botanical Gardens
Collingsworth County Museum
Deaf Smith County Historical Museum
Discovery Place Children's Museum
Dunham Bible Museum
Fort Concho National Historic Landmark
Fort Worth Museum of Science and History
❍ **Frontiers of Flight Museum**
Holocaust Museum Houston
❍ **Irving Arts Center**
Jefferson Historical Museum
Lady Bird Johnson Wildflower Center
Lake Jackson Historical Museum
Log Cabin Village
Mayborn Museum Complex
Modern Art Museum of Fort Worth
Museum of Regional History
Nasher Sculpture Center
National Cowboys of Color Museum
National Cowgirl Museum And Hall of Fame
Neill-Cochran House Museum
North Texas History Center
Pearce Collections Museum
Permian Basin Petroleum Museum
Sid Richardson Museum
Spanish Governor's Palace
Texas Discovery Gardens at Fair Park
The Ellen Noël Art Museum of the Permian Basin
The Heritage Society
The Sixth Floor Museum at Dealey Plaza
❍ **The Women's Museum: An Institute for the Future**
Varner-Hogg Plantation State Historic Site
Wichita Falls Museum of Art
Window on the Plains Museum

Utah

Fort Buenaventura
Fort Douglas Museum

Vermont

American Precision Museum
Billings Farm & Museum
Birds of Vermont Museum
Chaffee Art Center
Ethan Allen Homestead Museum
Fairbanks Museum & Planetarium
Hildene, The Lincoln Family Home
Shelburne Museum
Vermont Folklife Center

Virginia

Amazement Square
Casemate Museum
Children's Museum of Virginia
Contemporary Art Center of Virginia
Courthouse Galleries of the Portsmouth Museums
George C. Marshall Museum
Hampton Roads Naval Museum
Heritage Farm Museum
Hugh Mercer Apothecary Shop
Lightship PORTSMOUTH Museum
Mary Washington House
Museum of the Middle Appalachians
National Civil War Life Museum
Nauticus
Old Stone Jail Museum and Holland Page Place Log Cabin
Portsmouth Naval Shipyard Museum
Riddick's Folly House Museum
Rising Sun Tavern
Science Museum of Western Virginia
❍ **The American Civil War Center at Historic Tredegar**
The Manassas Museum
Thomas Jefferson's Poplar Forest
University of Richmond Museums
Virginia Discovery Museum
Virginia Living Museum
❍ **Virginia Museum of Natural History**
Virginia Sports Hall of Fame & Museum
Virginia War Memorial Foundation

Washington

Burke Museum of Natural History and Culture
Experience Music Project|Science Fiction Museum and Hall of Fame
Fort Walla Walla Museum
Frye Art Museum
Henry Art Gallery
Maryhill Museum of Art
Museum of History & Industry
Naval Undersea Museum
❍ **Northwest Museum of Arts & Culture (MAC)**
Seattle Art Museum
Seattle Asian Art Museum
Skagit County Historical Museum
Tacoma Art Museum
❍ **The Museum of Flight**
Washington State History Museum
Wenatchee Valley Museum & Cultural Center
❍ **Whatcom Museum**
❍ **Wing Luke Asian Museum**
World Kite Museum & Hall of Fame

West Virginia

Huntington Museum of Art
West Virginia Independence Hall

Wisconsin

Circus World Museum
Hearthstone Historic House Museum
International Clown Hall of Fame
Olbrich Botanical Gardens
Racine Art Museum
Ten Chimneys Foundation
The Octagon House and America's First Kindergarten
❍ **Wisconsin Maritime Museum**

Wyoming

❍ **Buffalo Bill Historical Center**

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Victory at Sea

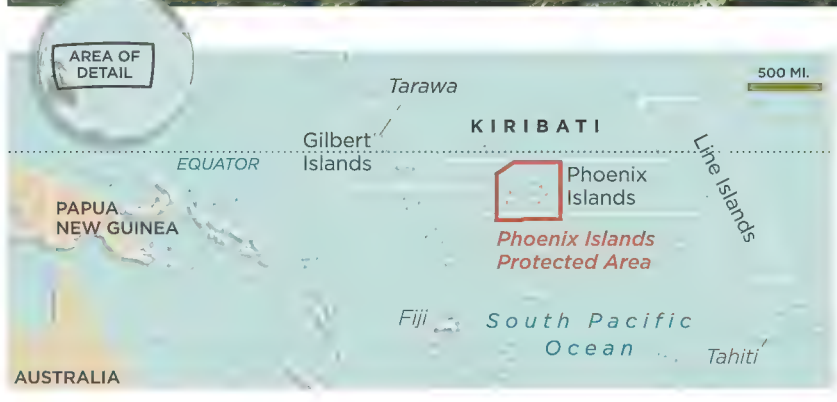
THE WORLD'S LARGEST PROTECTED AREA, ESTABLISHED THIS YEAR IN THE REMOTE PACIFIC, POINTS THE WAY TO RESTORING MARINE ECOSYSTEMS

BY CHRISTOPHER PALA

The waters around the Phoenix Islands Protected Area (yellow and blueback fusiliers) hold some of the world's most pristine coral reefs.

AT FIRST SIGHT, THE PEOPLE OF Kiribati, a nation of tiny islands in the central Pacific, would not appear to be model conservationists. Trash is abundant all along Tarawa, the capital island, a skinny atoll shaped like a backward L and crammed with 40,000 people. (It was the site of one of the costliest landings in World War II, in which 1,000 U.S. marines were killed.) The rustic charm of the traditional thatched houses, which have raised platform floors and no walls, is offset by the smell of human waste wafting from the beaches. The groundwater is contaminated. Infant mortality is high, life expectancy low. And yet this past January impoverished Kiribati established the world's largest protected area, a marine reserve the size of California.

It surrounds the Phoenix Islands, a remote, largely unpopulated archipelago 1,000 miles east of Tarawa. The 158,000-square-mile Phoenix Islands Protected Area, covering about 12 percent of Kiribati's watery domain, holds some of the world's most pristine coral reefs as well as a great abundance and diversity of tropical marine life. And it's the first reserve to place such a large area of open ocean off-limits to commercial fishing. The reserve is one of the planet's ecological bright spots, the boldest, most dramatic effort to save the oceans' coral reefs, the richest habitat in the seas. No wonder the I-Kiribati (pronounced ee-kiri-bahs, which is what the people call themselves; the country is pronounced kiri-bahs) want to showcase the reserve as a uniquely unspoiled center for marine science, recreational diving and eco-tourism.



Underwater photos from a scientific expedition to the Phoenix Islands (right: a visitor looks at giant clams) "caused quite a sensation," says Tukabu Teroroko (above), director of the new marine reserve (right).

Though coral reefs cover less than half a percent of the oceans' area, they host more than 25 percent of its fish species. The first worldwide assessment of coral reefs, released this summer, showed that a third face extinction due to climate change, disease, pollution and overfishing. Australia has outlawed fishing along a third of the Great Barrier Reef to stem the decline of fish stocks there. Palau, a prime scuba-diving destination in the western Pacific, has created a series of no-take areas to protect its healthiest reefs, which amount to a third of its coastline. Other Pacific island governments agreed to do the same, in what they dubbed the

CHRISTOPHER PALA *lives in Honolulu and is the author of* The Oddest Place on Earth: Rediscovering the North Pole.

CHRISTOPHER PALA; MAP: GUILBERT GATES; PP. 46-47 PAUL NICKLEN / NATIONAL GEOGRAPHIC IMAGE COLLECTION

PP. 48-49 PAUL NICKLEN / NATIONAL GEOGRAPHIC IMAGE COLLECTION

"Micronesia Challenge." The Bahamas, Dominican Republic, Jamaica and St. Vincent and the Grenadines, all of whose waters are severely overfished, have responded with a "Caribbean Challenge," which will set aside a fifth of their waters for coral and fish recovery.

In the United States, the largest protected area is the Papahanaumokuakea Marine National Monument, established in 2006 around the Northwestern Hawaiian Islands. It's about 140,000 square miles, larger than all the other U.S. national parks put together. Commercial fishing is expected to be phased out in the area by 2011. The reserve is home to rare and endangered fish as well as turtles, whales, seals and birds.

Marine reserves have proved to be even more effective than researchers hoped. In a recent study of more than 600 miles of coastline in the Great Barrier Reef where fishing was banned only two years earlier, populations of a popular grouper, locally known as the coral trout, were up to 68 percent higher than in areas where fishing had continued.

"It's much better to conserve than to rehabilitate," says Alan Friedlander, a fisheries ecologist with the biogeography branch of the National Oceanic and Atmospheric Administration in Honolulu. "An area as large and as pristine as the Phoenix Islands still has all the pieces of the puzzle that we need to understand how a reef ecosystem works. It's going to tell us what we need to know to use the most effective methods to rehabilitate the reefs where overfishing collapses the delicate balance of nature."

GREGORY STONE, A MARINE BIOLOGIST at the New England Aquarium in Boston, is one of the prime movers be-

hind the Kiribati reserve. He got a call from Rob Barrel, the operator of a luxury dive boat based in Fiji, who was assembling a group of scientists to study the islands in 2000 on behalf of some conservation-minded divers. Stone jumped at the chance to visit what he calls "the last unexplored oceanic coral reef archipelago in the world."

It was an eye-opening 11 days. "We were completely blown away by the density of marine life we saw—none of us had seen anything like it," Stone recalls. "We would dive into schools of big fish that were so thick they dulled the sunlight like clouds passing above. Looking down, we saw thousands of smaller fish blanketing the reef like flocks of birds." Off the island of Hull, he adds, "the density of giant clams was more than I'd even known existed. There were hundreds of thousands of them, their mantles were like a kaleidoscope."

David Obura, of the Coral Reef Degradation in the Indian Ocean project and chief coral scientist for the trip, says he was astonished by "the first pristine fish populations and the most healthy corals I'd ever seen. It was wild—constant movement and colors, fish streaming in rivers along the reef in one direction, then back the next moment, continually shifting and changing like tributaries in a delta, forming and re-forming. We'd see huge balls of fish that would envelop us and move on."

"For me," Stone says, "it was the first time I had seen what the ocean may have been like thousands of years ago."

That, in itself, was a major discovery. Scientists have a pretty good idea of what terrestrial wildlife and forests and deserts looked like before people started cutting trees, draining swamps and wiping out some species and introducing others. But the oceans' past has long been rather a blank. We fished first and asked questions later. One of the first great cases of overfishing, of north Atlantic cod, began in the 19th century, long before the scuba tank allowed us to get a good look underwater. Surviving accounts of fantastically abundant marine life, starting with explorers like Ferdinand Columbus (Christopher's son), seemed so different from what 20th-century fishermen and researchers had found that "people were wary to believe the history," says marine ecologist Stuart Sandin of the Scripps Institution of Oceanography. "Scientific diving on coral reefs began in the 1950s, and the goal at first was descriptive. No one worried about whether what they were seeing was natural or had been modified by people."

"IT WAS THE FIRST TIME I HAD SEEN WHAT THE OCEAN MAY HAVE BEEN LIKE THOUSANDS OF YEARS AGO."

Marine reserves protect less than 1 percent of the oceans (map). Gregory Stone (above) led the effort for the new reserve.

It was only in the 1990s that marine scientists became aware of what Daniel Pauly, a fisheries biologist at the University of British Columbia, calls the shifting baseline syndrome—the problem of establishing historic populations of marine life in a given species or community. Just what is a healthy number of, say, red snapper in the Gulf of Mexico? "Each generation [of scientists] accepts as a base line the stock size and species composition that occurred at the beginning of [that generation's] career," says Pauly. The result is that, over time, the expectation of the natural number of fish in the sea gets smaller and smaller—until the population is so small that even a modest environmental perturbation, or a tad more fishing, causes it to unexpectedly collapse, as the cod population collapsed off Newfoundland and Labrador in the early 1990s.

By the time Stone's team arrived in the Phoenix Islands, marine biologists "were all subconsciously searching for the place that was truly pristine, that would end the debate about what a truly pristine reef should look like," Stone recalls. "And we knew it when we found it."

Obura says that once he dived into the waters of the Phoenix Islands, "I realized this was the holy grail and wondered how long it would last."

In 2000 and in a second survey in 2002, Stone and his colleagues documented more than 150 species of coral and 550 species of reef fish. While the diversity was not unusual for this part of the world, the abundance was. The team found numerous reef sharks and groupers that had become rare elsewhere. "We saw the

MAP: GUILBERT GATES (SOURCE: *SMITHSONIAN OCEAN: OUR WATER, OUR WORLD*; MAPPING CREATED BY COLLINS BARTHOLOMEW LTD USING MARINE PROTECTED AREAS DATA PROVIDED BY LOUISA WOOD AND MPA GLOBAL); CAT HOLLOWAY; P. 51 CAT HOLLOWAY

highest density of big Napoleon wrasses in the world," says Stone, "and that speaks volumes because that's the first fish the fishermen fish if"—he burst out laughing—"fishermen fish fish. Seriously, if those are in good shape, you know everything else is going to be fine." A 30-year-old Napoleon wrasse can weigh up to 420 pounds, and in Hong Kong its flesh retails for $90 per pound; the lips sell for $300.

WHY SO MANY FISH in the Phoenix Islands? The islands are remote: 2,000 miles from Hawaii and 700 miles from the nearest major airport, in Samoa, which precludes flying live catch to major markets. In addition, the creation of the reserve was possible in part because it came at a time when the virtually unpopulated islands were considered—well, largely useless.

Polynesians settled the islands and built structures of coral stone between 950 and 1500, but they never stayed for long, probably because of frequent droughts. The islands' main source of potable water is rain, which can be scarce. In the early 1800s, whalers charted most of the islands but seldom landed on them. Until the 1880s, U.S. companies mined many of the islands for guano, or seabird droppings, which is rich in phosphate and nitrate and is used as fertilizer. Great Britain later annexed most of the islands and planted tens of thousands of coconut trees. But coconuts, like people, require plenty of water, and the plantations dried up and failed or were abandoned. Colonies intended to ease crowding in Tarawa and the other Gilbert Islands were started in the 1930s and 1940s, but all had been abandoned by the 1960s.

Being halfway between Honolulu and New Zealand made the Phoenix Islands attractive as a refueling stop. Pan American World Airways Clipper seaplanes began touching down at the island of Kanton in 1940, but such travel ended in World War II, when Kanton was taken over by the U.S. military. After the war, Pan Am and other airlines returned with wheeled propeller craft, and a business exporting fish to Hawaii flourished briefly. But the long-range Boeing 707 jet, introduced in 1954, made the airport obsolete. In 1960, NASA built a tracking station for the Mercury space program on Kanton. The station closed in 1967. Two years later, the U.S. Air Force built a base to monitor the trajectory of Minuteman missiles, test-fired from California over the Pacific, but it too closed, in 1979.

That year, Kiribati was born as an independent nation incorporating the Gilbert Islands and the Phoenix Islands, along with most of the Line Islands. Today it has a population of 110,000. The nation's "exclusive economic zone," where it has sovereignty over natural resources (from 12 to 200 nautical miles from shore, the closest 12 miles being its territorial waters), is 1.37 million square miles, or larger than India. Its entire landmass is 313 square miles, the size of Kansas City.

WHEN GREGORY STONE first approached Kiribati officials in 2001 about creating a marine reserve, he carried a lavishly

The remote reserve is the size of California. (A school of black jack swim near a shipwreck.)

illustrated book of underwater photographs taken around the Phoenix Islands. "The book caused quite a sensation," recalls Tukabu Teroroko, then the deputy fisheries minister. "We had no idea there was so much life out there."

It was clear that outlawing the small-scale commercial fishing that occurred close to the Phoenix Islands would pose no political problem, but restricting deep-ocean fishing could be painful: nearly a third of Kiribati's $80 million annual budget came from licenses sold to deep-water fishing operations, especially the large ships that can haul up to 100 tons of skipjack, yellowfin and bigeye tuna a day.

The key to banning tuna fishing was the Washington, D.C.-based environmental group Conservation International, which Stone brought into the negotiations. The group said it could raise money for the management of a marine reserve and compensate the I-Kiribati for any income they forfeited by restricting commercial fishing. "The Republic of Kiribati has now set a standard for other countries in the Pacific and elsewhere in the world," says Conservation International president Russell Mittermeier.

"WE THOUGHT IT WAS A VERY GOOD IDEA IN THIS AGE OF THREAT TO BIODIVERSITY."

Kiribati (above: President Tong) will be reimbursed for income lost from the ban on commercial fishing.

Kiribati President Anote Tong, a graduate of the London School of Economics, who was re-elected for his second four-year term this past October, has supported the reserve initiative from the beginning. "We thought it was a very good idea in this day and age of threat to biodiversity," he says in his spartan office in the ultramodern Parliament building. Tong, who favors traditional Pacific skirts, says "we believe the scope for ecotourism is great."

Teroroko, whose salary as marine reserve director and budget come from Conservation International, says the reserve "gives us insurance against the loss of marine life. It will show the world that even though we're small, we are leaders. And it will give scientists a place to observe the impact of global warming with no other man-made factors present."

FOR A NATION THAT IS SPREAD OUT across a series of coral atolls, the health of the surrounding reefs is a matter of life and death, for they provide not only food but also protection from waves. And such atoll reefs become even more important as sea levels rise. Seas rose almost 7 inches in the 20th century, according to the Intergovernmental Panel on Climate Change, and are conservatively predicted

They were "the first pristine fish populations and the most healthy corals (fairy basslets near stone coral) I'd ever seen," says reef expert David Obura.

PAUL NICKLEN / NATIONAL GEOGRAPHIC IMAGE COLLECTION; TIM LAMAN / NATIONAL GEOGRAPHIC IMAGE COLLECTION; P. 52 STERLING ZUMBRUNN / CONSERVATION INTERNATIONAL; PP. 52-53 NICK NORMAN / NATIONAL GEOGRAPHIC IMAGE COLLECTION

to rise between 8 and 24 inches this century because of melting of ice caps and other environmental changes brought on by global warming.

Healthy coral reefs will continue to grow even as sea levels rise, says Jim Maragos, a coral reef biologist with the U.S. Fish and Wildlife Service in Honolulu. "But the damaged ones will not." A dead or dying coral reef will break up into rubble after a couple of decades. Eventually, big ocean swells could wash away villages on islands that, like Tarawa, rise only a few feet above the high-tide mark.

As it happens, perhaps the most ambitious study of the health of coral reefs was conducted partly in Kiribati territory and reported this year. Scientists compared four areas of the Line Islands, strung across 450 miles: Kingman Reef, which has no permanently dry land, is a U.S. wildlife refuge; Palmyra Atoll has been closed to fishing since 2001; and the Kiribati islands of Tabuaeran (formerly called Fanning) and Kiritimati (formerly called Christmas), whose populations have shot up in the last few decades to 2,500 and 5,100, respectively. Both are now being overfished in parts, the scientists say.

"Going from Kingman to Palmyra to Fanning to Christmas is like going forward in time," says Sandin, of the Scripps Institution, who coordinated the study. "It gives you what we called a gradient of human disturbance—a way to examine precisely how human activity affects the reefs."

The marine scientists analyzed all aspects of reef life—fish, corals, algae and, for the first time, microbes. As they moved from Kingman to Kiritimati, the abundance of fish fell dramatically. At Kingman, it was 5.3 metric tons per hectare, of which 40 percent were sharks, 40 percent other large predators like jacks, snappers and groupers and 20 percent small fish. Palmyra came in at 2.5 tons per hectare, Tabuaeran at 1.7 tons and Kiritimati, where virtually all the sharks have been killed for their fins, at just 1.3 tons.

The scientists discovered a link between shark density and coral reef health: the coral reefs at Kiritimati had the most algal growth, and Kingman's the least. "We're not sure how the link works," says Sandin, "but we think that when there are large numbers of sharks, herbivores eat more algae

Watch undersea footage from the Phoenix Islands at Smithsonian.com/phoenix

The reserve hosts an unsurpassed diversity and abundance of marine creatures (opposite top: coral banded shrimp), including sharks (above: whitetip reef sharks) killed elsewhere for their fins and prized fish (opposite: Napoleon wrasse) that have been fished out of most waters.

CAT HOLLOWAY

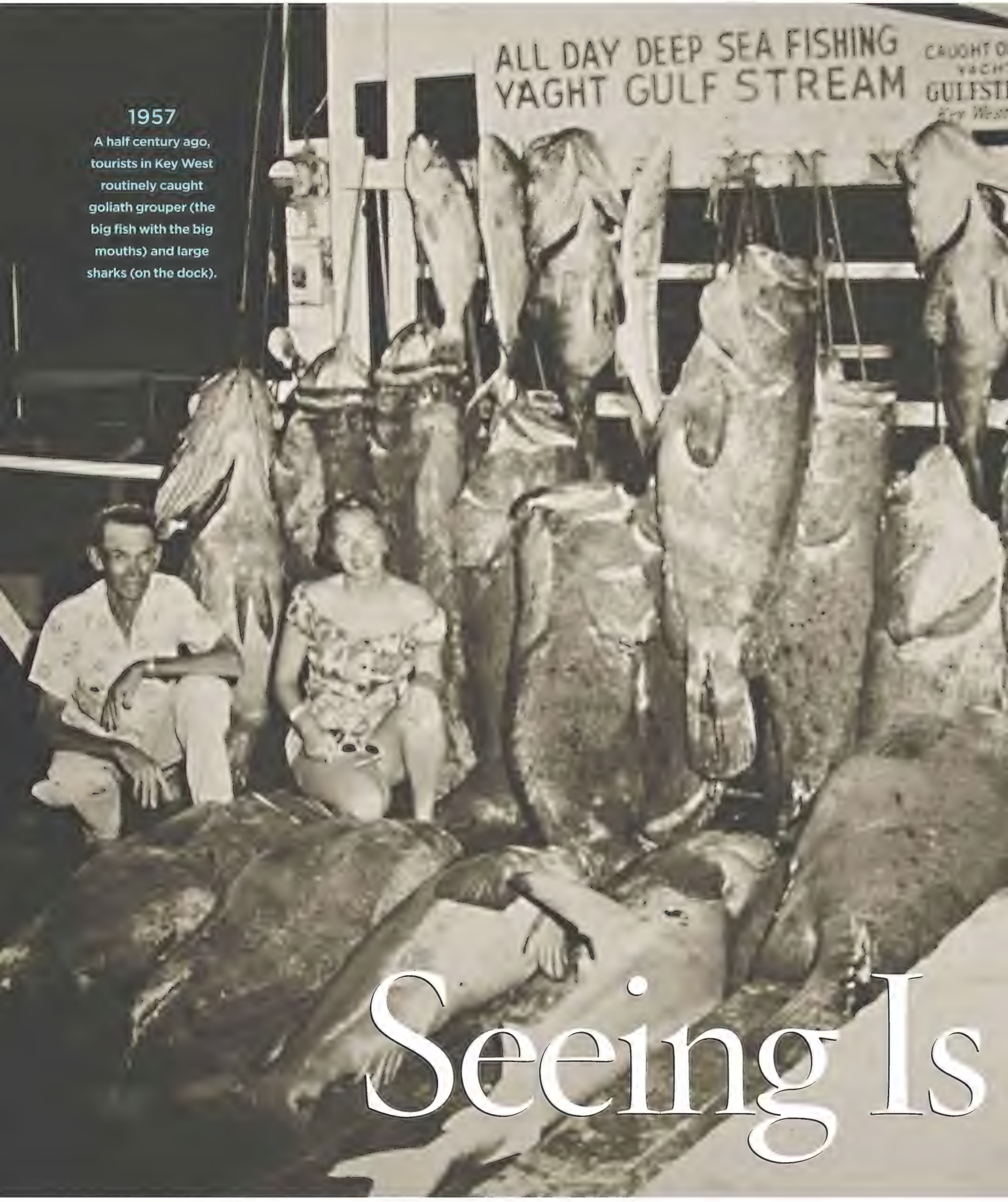
and grow faster so they can reproduce before they themselves get eaten." Algae can stifle coral development and also release sugar into the water, providing food for bacteria that include pathogens like E. coli and streptococcus and staphylococcus, which increase the rate of coral disease and attack larvae of the organisms that make up coral reefs. Overall, the researchers found that the corals in Kingman were in much better shape than those in Kiritimati, despite satellite data indicating a 2002 spike in area water temperatures, which causes coral bleaching and other diseases. "This shows that healthy reefs with a lot of fish can survive global warming much better than fished-out ones," says Sandin. "That's another reason for creating more marine reserves and building up the fish populations."

TARATAAKE TEANNAKI, Kiribati's head of tourism, hopes that even more scientists will start coming to Kiribati. "We want to build a lab like they have in Palmyra," he says. And he hopes to use the cachet of the world's biggest marine reserve to develop eco-tourism focused on diving and bird-watching. Jobs are sorely needed in Kiribati, where only 21 percent of the eligible workers are fully employed, most of them in government jobs.

Jacob Teem, who represents Kanton and Kiritimati islands in the Kiribati Parliament, operates a small catch-and-release fishing lodge on Kiritimati and says he plans to start another in Kanton. Emil Schutz, who runs a small eco-resort on a scenic islet near Tarawa, hopes to create a bigger one on Kanton to cater to scientists and recreational divers.

Reserve director Teroroko says the more tourist boats, the better: they could function as the authorities' eyes and ears and help prevent poaching inside the reserve. He hopes to attract a fleet that would take bird-watchers to Birnie, Phoenix and McKean islands, all longtime bird sanctuaries. "We could even anchor some floating platforms and let tourists dive off them," he says.

Might the Phoenix Islands someday be harmed by too much of a good thing? "The Phoenix are too isolated to ever be ruined by tourism, so I'm not worried," says Stone. "On the contrary, I hope that those who get to see the extraordinary underwater life in these islands will spread the notion that it's really important to save our last pristine reefs. And diving off a floating platform with tens of thousands of fish going around has to be the ultimate way of experiencing the open ocean and seeing some of the most remarkable animals on earth."



1957

A half century ago, tourists in Key West routinely caught goliath grouper (the big fish with the big mouths) and large sharks (on the dock).

Seeing Is

Believing

PHOTOGRAPHS AND OTHER HISTORICAL RECORDS TESTIFY TO THE FORMER ABUNDANCE OF THE SEA

BY LAURA HELMUTH

WHETHER IT'S A MESS OF BLUEGILL hooked with a cane pole, a rare trout snagged with a fly or a sailfish suitable for mounting, people like to have their pictures taken with the fish they catch. They beam, proud and pleasantly sunburned, next to their prizes.

Loren McClenachan searches historical archives in the United States and Europe for such photos, and she found a trove of them in Key West, Florida, in the Monroe County Public Library. One set allowed her to look at fish caught by day-trippers aboard boats over the past 50 years. The first *Gulf Stream* fishing boat started operating out of Key West in 1947; today *Gulf Stream III* uses the same slip. Tourists' hairstyles and clothes change over the years, but the most striking difference is in the fish: they get smaller and fewer, and species disappear with the passage of time.

McClenachan with a porgy in Key West (2007).

McClenachan, a graduate student at the Scripps Institution of Oceanography in San Diego, is part of a new field called historical marine ecology. Its scientists analyze old photographs, newspaper accounts, ships' logs and cannery records to estimate the quantity of fish that used to live in the sea. Some even look at old restaurant menus to learn when certain seafood became more costly, usually due to scarcity. McClenachan's study and others are part of the Census of Marine Life, a ten-year effort sponsored by foundations and governments worldwide that aims to understand the ocean's past and present, the better to predict the future.

The historical records reveal astonishing declines in most fish stocks. University of New Hampshire researchers, for instance, studied thousands of water-stained pages of 19th-century fishing port log books to determine that 150 years ago, there was 25 times as much cod off New England and

1958

c. 1983

2007

Nova Scotia as today. Archaeologists in Europe have analyzed discarded fish bones going back 14 centuries. They conclude that milldams blocked salmon from swimming upstream in the 1100s; freshwater fish became scarcer over time; Europeans started eating more fish from the sea in the Middle Ages; and saltwater fish got smaller and smaller.

"Unfortunately, history has repeated itself again and again and again, to devastating effect," says Callum Roberts, a marine biologist at England's University of York. "People like food in big packages," he says, and they catch the biggest packages first, whether it's turtles or whales or cod or clams. And then they catch whatever is left—including animals so young that they haven't reproduced yet—until, in some cases, the food is gone. To break out of this spiral, Roberts says, "it is vital that we gain a clearer picture of what has been lost."

The basic remedy for a decline in fish—less fishing—has been clear since World War I, when a blockade of the North Sea shut down fishing for four years; afterward, catches doubled. In the past decade, marine reserves in the Caribbean, Hawaii and the Great Barrier Reef have allowed fish populations to increase not just in the protected areas but also in nearby waters, where fishing hauls are now more profitable.

In Key West, McClenachan analyzed photos from the three *Gulf Streams* and another boat, the *Greyhound*, as well as articles about trophy fish from the *Key West Citizen* newspaper. At scientific conferences earlier this year, she reported that she had identified and estimated the sizes of 1,275 fish from 100 photographs. In the 1950s, people caught huge grouper and sharks. In the 1970s, they landed a few grouper but more jack. Today's main catch is small snapper, which once weren't deemed worthy of a photo; people just piled them on the dock.

The goliath grouper (top) is now endangered, and few Key West anglers land white margate (middle: displayed) today. "It's changed so much," says McClenachan (bottom: most are snappers).

In the Keys, "the vast majority of commercially fished species, especially snapper and grouper, are badly overfished," says Brian Keller, NOAA's science coordinator for the Gulf of Mexico. Protection of endangered species and no-take zones in the Florida Keys National Marine Sanctuary have allowed some big fish, including the endangered goliath grouper, to begin a comeback. McClenachan's studies, he says, give fisheries managers "a better concept of what a restored ocean might look like."

The *Gulf Stream* and *Greyhound*, whose all-day outings cost about $50, including bait and tackle, cater to a wide variety of anglers, including McClenachan herself. "It was poignant," she says, to see so much excitement over catching fish. "The people on the boat don't have any sense that it's changed so much so quickly."

LAURA HELMUTH *is a senior editor at* SMITHSONIAN.

CHARLES ANDERSON (3); PP. 56-57 CHARLES ANDERSON; P. 57 LOREN MCCLENACHAN

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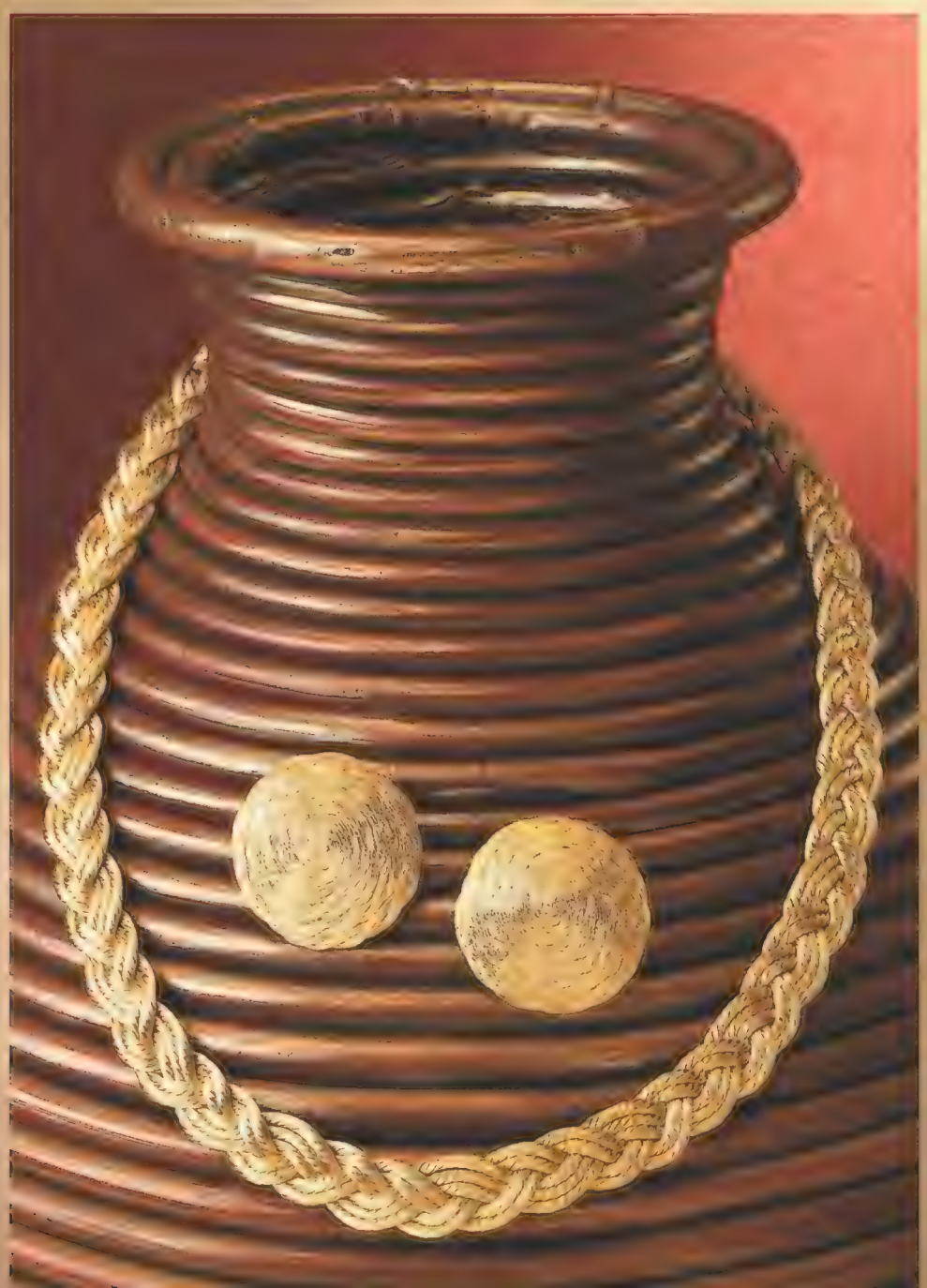

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FACE THE NATION

Abraham Lincoln's debates with Stephen A. Douglas for the U.S. Senate in 1858 turned the backwoods rail-splitter into presidential timber

BY FERGUS M. BORDEWICH

IN FREEPORT, ILLINOIS, JUST BEYOND THE SOMNOLENT DOWN-town, a small park near the Pecatonica River is wedged next to the public library. In the mid-19th century, however, land along the shore stretched green into the distance, the grassy hills dotted with maples and river birches. It was here, on August 27, 1858, one hundred fifty years ago, that U.S. senatorial candidates Abraham Lincoln and Stephen A. Douglas waged a war of words.

"Imagine that you're there," says my guide, George Buss, stepping onto the four-foot-high concrete replica of a speaker's platform, installed here in 1992 to memorialize the debate. He places a hand on the head of the squat, life-size bronze sculpture of Douglas, who was a foot shorter than Lincoln. "Picture the banners, brass bands and parades . . . people pushing and shoving . . . kids running up to the courthouse for sandwiches, where they're barbecuing an ox. Douglas is pacing back and forth like a lion. People in the back of the crowd are shouting, 'What'd he say? What'd he say?'"

At 6-foot-5 and with craggy features, deep-set eyes and gangly limbs, Buss, a Freeport school administrator, bears an eerie resemblance to the 16th president. Indeed, for 22 years, Buss has moonlighted as one of the nation's most accomplished Lincoln interpreters. As a schoolboy nearly 40 years ago, he got hooked on Honest Abe when he learned that one of the seven historic Lincoln-Douglas debates had taken place in his hometown.

Buss continues: "Lincoln stretches up onto his toes to make a point." He recites Lincoln's words: "Can the people of a United States territory, in any lawful way, against the wish of any citizen of the United States, exclude slavery from its limits prior to the formation of a state constitution?" Looking into the distance, Buss repeats: "Just imagine that you're there."

Lincoln and incumbent senator Douglas squared off, of course, in the most

Douglas expected to crush his untried opponent (above: Lincoln in 1858) in the enormously crowd-pleasing debates (opposite). Historian Allen C. Guelzo says that "few believed [Lincoln] could actually beat Douglas."

NEW YORK PUBLIC LIBRARY; P. 60 GRANGER COLLECTION, NEW YORK

famous debates in American history. The Illinois encounters would reshape the nation's bitter argument over slavery, transform Lincoln into a contender for the presidency two years later and set a standard for political discourse that has rarely been equaled. Today, the debates have achieved a mythic dimension, regarded as the ultimate exemplar of homegrown democracy, enacted by two larger-than-life political figures who brilliantly explicated the great issues of the day for gatherings of ordinary citizens.

Momentous issues were at stake. Would the vast western territories be opened to slavery? Would slavery insinuate itself into the states where it was now illegal? Had the founding fathers intended the nation to be half slave and half free? Did one group of states possess the right to dictate to another what was right and wrong? According to Tom Schwartz, Illinois' state historian, "each man was pretty plain in how he would deal with the major issue facing the nation: the expansion or elimination of slavery. These are still the gold standard of public discussion."

But while the debates have long been recognized as a benchmark in American political history, they are probably more celebrated than they are understood. It is indeed true that in the course of seven debates, two of the country's most skilled orators delivered memorably provocative, reasoned and (occasionally) morally elevated arguments on the most divisive issues of the day. What is less well-known, however, is that those debates also were characterized by substantial amounts of pandering, baseless accusation, outright racism and what we now call "spin." New research also suggests that Lincoln's powers of persuasion were far greater than historians previously realized. In our own day, as two dramatically different candidates for president clash across an ideological divide, the oratorical odyssey of Abraham Lincoln and Stephen A. Douglas may offer more than a few lessons—in the power of persuasive rhetoric, the effect of bigotry and the American public's craving for political leaders who are able to explain the great issues of the day with clarity and conviction.

Both then and now, the debates' impact was amplified by changing technology. In 1858, innovation was turning what would otherwise have been a local contest into one followed from Mississippi to Maine. Stenographers trained in shorthand recorded the candidates' words. Halfway through each debate, runners were handed the stenographers' notes; they raced for the next train to Chicago, converting shorthand into text during the journey and producing a transcript ready to be typeset and telegraphed to the rest of the country as soon as it arrived. "The combination of shorthand, the telegraph and the railroad changed everything," says Allen C. Guelzo, author of *Lincoln and Douglas: The Debates That Defined America*. "It was unprecedented. Lincoln and Douglas knew they were speaking to the whole nation. It was like JFK in 1960 coming to grips with the presence of the vast new television audience."

Freeport school administrator George Buss moonlights as Lincoln. In the debates (opposite: map), "Douglas [was] pacing back and forth like a lion," he says.

CHIP WILLIAMS

AT THE TIME, LINCOLN WAS NOT THE HAGGARD, hollow-eyed figure of his Civil War photographs. At 49, he was still cleanshaven, with chiseled cheekbones and a faint smile that hinted at his irrepressible wit. And while he affected a backwoods folksiness that put voters at ease, he was actually a prosperous lawyer who enjoyed an upper-middle-class existence in an exclusive section of Springfield, the state capital. "Lincoln was always aware of his image," says Matthew Pinsker, a Lincoln scholar based at Dickinson College in Carlisle, Pennsylvania. "He deliberately emphasized his height by wearing a top hat, which made him seem even taller. He knew that it made him stand out."

For Lincoln, the Republican senatorial nomination was a debt repaid; four years before, he had withdrawn from the contest for Illinois' other U.S. Senate seat, making way for party regular Lyman Trumbull. "The party felt that it had an obligation to him, but few believed that he could actually beat Douglas," says Guelzo. "He was sort of the Mitt Romney of the Illinois Republican Party, a nice guy who finished last." To Lincoln's chagrin, some Republican power brokers—including *New York Tribune* editor Horace Greeley—actually favored Douglas, whom they hoped to recruit as a Republican presidential candidate in 1860.

The 1858 Lincoln-Douglas Debates

MAP: JOHN TOMANIO

"It was unprecedented. Lincoln and Douglas knew they were speaking to the whole nation."

In contrast to the moody and cerebral Lincoln, Douglas was gregarious and ingratiating, with a gift for making every voter feel that he was speaking directly to him. "Douglas was a pure political animal," says James L. Huston, author of *Stephen A. Douglas and the Dilemmas of Democratic Equality*. "For him, the will of the majority was everything. He tells voters, 'Whatever you want, gentlemen, that's what I'm for!'" In spite of poor health, he possessed such volcanic energy that he was known as "a steam engine in breeches." Within three years of arriving in Illinois from his native Vermont, in 1833, he won election to the state legislature. Four years after that, at 27, he was appointed to the State Supreme Court, and at 33 to the U.S. Senate. (In 1852, Lincoln, who had served a single undistinguished term in Congress, jealously complained, "Time was when I was in his way some; but he has outgrown me & [be]strides the world; & such small men as I am, can hardly be considered worthy of his notice; & I may have to dodge and get between his legs.")

On the great issue of their time, the two men could not have been more diametrically opposed. Although Douglas professed a dislike of slavery, his first wife, Martha, who died in 1853, had owned some 150 slaves in Mississippi—a fact he did not publicize. During the marriage, the sweat of slaves had provided the natty outfits and luxury travel that he relished. What Lincoln detested about slavery was not only the degradation of African-Americans but also the broader tyranny of social hierarchy and economic stagnation that the practice threatened to extend across America. But like many Northerners, he preferred gradual emancipation and the compensation of slave owners for their lost property to immediate abolition. "For Lincoln, slavery is the problem," says Guelzo. "For Douglas, it's the controversy about slavery that's the problem. Douglas' goal is not to put an end to slavery, but to put an end to the controversy."

For most of the 1850s, Douglas had performed a political high-wire act, striving to please his Northern supporters without alienating Southerners whose backing he would need for his expected run for the presidency in 1860. He finessed the looming slavery question by trumpeting the doctrine of "popular sovereignty," which asserted that settlers in any new territory had the right to decide for themselves whether it should be admitted to the union as a slave or free state. In 1854, Douglas had incensed Yankees by pushing the Kansas-Nebraska Act through Congress as popular sovereignty; it opened those territories to slavery, at least in principle. Nearly four years later, he angered Southerners by opposing the pro-slavery Kansas state constitution that President James Buchanan supported. As he prepared to face Lincoln, Douglas didn't want to offend the South any further.

Although we regard the debates today as a head-to-head contest for votes, in fact neither Lincoln nor Douglas was on the ballot. U.S. senators were chosen by state legislatures, as they would be until 1913. That meant that the party holding the most seats in the state legislature could choose who to send to the Senate. Even this was not as straightforward as it seemed. The sizes of districts varied wildly as a result of gerrymandering, in Illinois' case by Democrats, who dominated state politics. In some Republican-leaning districts, for instance, it took almost twice as

Writer **FERGUS M. BORDEWICH***'s most recent book is* Washington: The Making of the American Capital.

many votes to elect a legislator as in pro-Democratic districts. "Southern Illinois was Southern in outlook, and many people there sympathized with slavery," says historian Schwartz. "Northern Illinois was abolitionist. The middle section of the state, heavily populated by members of the old Whig Party, was politically fluid. Lincoln's challenge was to bring that middle belt over to the Republicans."

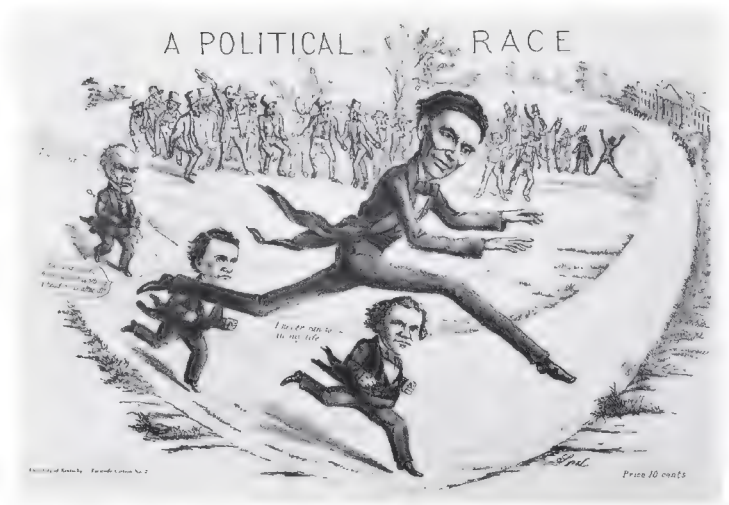
Each debate was to be three hours long. The candidates would address each other directly. The first speaker would deliver an hourlong opening statement; the second would then have the floor for an hour and a half. The first speaker would then return to the podium for a half-hour rebuttal. There were no restrictions on what they could say. Never before had an incumbent senator, much less one of Douglas' stature, agreed to debate his challenger in public. (Douglas assumed that his renowned oratorical powers would defeat Lincoln handily.) Excitement ran high. Tens of thousands of men, women and children flocked to the debates, which—in an age before television, national teams or mass entertainment—took on the atmosphere of a championship prizefight and county fair combined. "We were fed on politics in those days, and my twin sister and I would not have missed the debate for all the things in the world," Harriet Middour, an Illinois housewife who had attended the Freeport debate as a girl, would recall in 1922. Lincoln, whose campaign funds were limited, traveled modestly by coach. Douglas rolled along in style, ensconced in his own private railway car, trailed by a flatcar fitted with a cannon dubbed "Little Doug," which fired off a round whenever the train approached a town.

"The choice facing voters was pretty stark," says Chuck Scholz, Quincy, Illinois' former mayor. "Across the river lay the slave state of Missouri."

The two antagonists met first on August 21, 1858, in Ottawa, 50 miles west of Chicago. Douglas sneered that Lincoln was no more than a closet abolitionist—an insult akin to calling a politician soft on terrorism today. Lincoln, he went on, had wanted to allow blacks "to vote on an equality with yourselves, and to make them eligible to [sic] office, to serve on juries, and to adjudge your rights." Lincoln appeared stiff and awkward and failed to marshal his arguments effectively. The pro-Douglas *State Register* crowed, "The excoriation of Lincoln was so severe that the Republicans hung their heads in shame."

Six days later at Freeport, Douglas still managed to keep Lincoln largely on the defensive. But Lincoln set a trap for Douglas. He demanded to know whether, in Douglas' opinion, the doctrine known as popular sovereignty would permit settlers to exclude slavery from a new territory before it became a state. If Douglas answered "no," that settlers had no right to decide against slavery, then it would be obvious that popular sovereignty would be powerless to stop westward expansion of bondage, as Douglas sometimes implied that it could. If Douglas answered "yes," that the doctrine permitted settlers to exclude slavery, then he would further alienate Southern voters. "Lincoln's goal was to convince voters that popular sovereignty was a sham," says Guelzo. "He wanted to make clear that Douglas' attitude toward slavery would inevitably lead to more slave states—with more slave-state senators and congressmen, and deeper permanent entrenchment of the slave power in Washington." Douglas took Lincoln's bait: "Yes," he replied, popular sovereignty would allow settlers to exclude slavery from new territories. Southerners had suspected Douglas of waffling on the issue. Their fear was now confirmed: two years later, his answer would come back to haunt him.

"Something extraordinary was going on. From now on, Lincoln was like Rocky Balboa."



After one debate, Lincoln was described as delivering "one of the severest skinnings" to Douglas. (Two years later Abe would be depicted as running away with the presidency.)

The debaters met for the third time on September 15 at Jonesboro, in a part of southern Illinois known as "Egypt" for its proximity to the city of Cairo. Once again, Douglas harangued Lincoln for his alleged abolitionism. "I hold that this government was made on the white basis, by white men,

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for the benefit of white men and their posterity forever, and should be administered by white men and none others," he fulminated. He warned that Lincoln would not only grant citizenship and the right to vote to freed slaves but would allow black men to marry white women—the ultimate horror to many voters, North and South. Douglas' racial demagoguery was steadily taking a toll. Lincoln's backers feared that not only would Lincoln lose the election, but that he would bring down other Republican candidates. Finally, Lincoln counter-attacked.

At Charleston, three days later, Lincoln played his own race card. The debate site—now a grassy field between a trailer park and a sprawl of open sheds where livestock is exhibited at the county fair—lies only a few miles north of the log cabin where Lincoln's beloved stepmother, Sarah, still lived. On that September afternoon, Lincoln declared that while he opposed slavery, he was not for unequivocal racial equality. "I am not nor ever have been in favor of making voters or jurors of Negroes, nor of qualifying them to hold office, nor to intermarry with white people," Lincoln now asserted, "and I will say in addition to this that there is a physical difference between the white and black races which I believe will forever forbid the two races living together on terms of social and political equality. And inasmuch as they cannot so live, while they do remain together there must be the position of superior and inferior, and I as much as any other man am in favor of having the superior position assigned to the white race."

Ugly though it was, Charleston would prove to be the debates' turning point. Until that moment, Lincoln had been on the defensive. But a shift in public perception was underway. "People suddenly realized that something extraordinary was going on, that Douglas had failed to vanquish Lincoln," says Guelzo. "From now on, Lincoln was like Rocky Balboa."

TOM WOLFF

The debates, says historian Guelzo, signaled a huge shift in public perception: "People suddenly realized that Douglas had failed to vanquish Lincoln."

The debaters' next venue was Knox College in the western Illinois town of Galesburg, a bastion of evangelical religion and abolitionism. On the day of the debate, October 7, torrential rains and gusting winds sent campaign signs skittering and forced debate organizers to move the speakers' platform, sheltering it against the outside wall of the neo-Gothic Old Main hall. The platform was so high, however, that the two candidates had to climb through the building's second-floor windows and then down a ladder to the stage. Lincoln drew a laugh when he remarked, "At last I can say now that I've gone through college!"

"It took Lincoln several debates to figure out how to get on the offensive," says Douglas L. Wilson, co-director of the Lincoln Studies Center at Knox College. "Unlike Douglas, who always said the same things, Lincoln was always looking for a new angle to use. Rather, Lincoln's strategy was about impact and momentum. He knew that at Galesburg he'd have a good chance to sway hearts and minds."

The atmosphere was raucous. Banners proclaimed: "Douglas the Dead Dog—Lincoln the Living Lion," and

"Greasy Mechanics for A. Lincoln." Estimates of the crowd ranged up to 25,000.

When Lincoln stepped forward, he seemed a man transformed. His high tenor voice rang out "as clear as a bell," one listener recalled. Without repudiating his own crude remarks at Charleston, he challenged Douglas' racism on moral grounds. "I suppose that the real difference between Judge Douglas and his friends, and the Republicans on the contrary, is that the Judge is not in favor of making any difference between slavery and liberty . . . and consequently every sentiment he utters discards the idea that there is any wrong in slavery," Lincoln said. "Judge Douglas declares that if any community want slavery, they have a right to have it. He can say that, logically, if he says that there is no wrong in slavery; but if you admit that there is a wrong in it, he cannot logically say that anybody has a right to do wrong." In the judgment of most observers, Lincoln won the Galesburg debate on all points. The pro-Lincoln *Chicago Press and Tribune* reported: "Mr. Douglas, pierced to the very vitals by the barbed harpoons which Lincoln hurls at him, goes around and around, making the water foam, filling the air with roars of rage and pain, spouting torrents of blood, and striking out fiercely but vainly at his assailant."

Six days later, the debaters clashed again at the Mississippi River port of Quincy, 85 miles southwest of Galesburg. "The debate was the biggest thing that ever happened here," says Chuck Scholz, the town's former mayor and a history buff. Scholz, who led Quincy's urban renewal in the 1990s, stands in Washington Square, the site of the debate, among cherry and magnolia trees in glorious bloom. "From where they stood that afternoon, the choice facing voters was pretty stark," says Scholz. "Here they were on the free soil of Illinois. Within sight across the river lay the slave state of Missouri."

Lincoln came on aggressively, building on the same argument he had launched the week before. Although the Negro could not expect absolute social and political equality, he still enjoyed the same right to the freedoms of life, liberty and the pursuit of happiness that were promised to all by the Declaration of Independence. "In the right to eat the bread without the leave of anybody else which his own hand earns, he is my equal and the equal of Judge Douglas, and the equal of every other man," Lincoln declared. Douglas, ill with bronchitis, seemed sluggish and unsteady. He accused Lincoln of promoting mob violence, rebellion and even genocide by confining slavery only to the states where it already existed. Without room for slavery to expand, the natural increase of the slave population would lead to catastrophe, Douglas claimed. "He will hem them in until starvation seizes them, and by starving them to death, he will put slavery in the course of ultimate extinction," Douglas went on. "This is the humane and Christian remedy that he proposes for the great crime of slavery." The pro-Lincoln *Quincy Daily Whig* reported that Lincoln had given Douglas "one of the severest skinnings he has received."

"Lincoln was vibrant," says Huber. "Douglas was liquored up and near the point of collapse."

The next day, the two men walked down to the Mississippi River, boarded a riverboat and steamed south to the port of Alton for their seventh and final debate. Today, Alton's seedy riverfront is dominated by towering concrete grain elevators and a garish riverboat casino, the *Argosy*, the city's main employer. "If it wasn't for that boat, this city would be in dire straits," says Don Huber, Alton's township supervisor. "This is the Rust Belt here."

On October 15, the weary gladiators—they had been debating for seven weeks now, not to mention speaking at hundreds of crossroads and whistle-stops

Mounting a brilliant offensive, Lincoln (top) outstripped Douglas (left). Says historian Douglas L. Wilson: "Lincoln's strategy was about impact and momentum."

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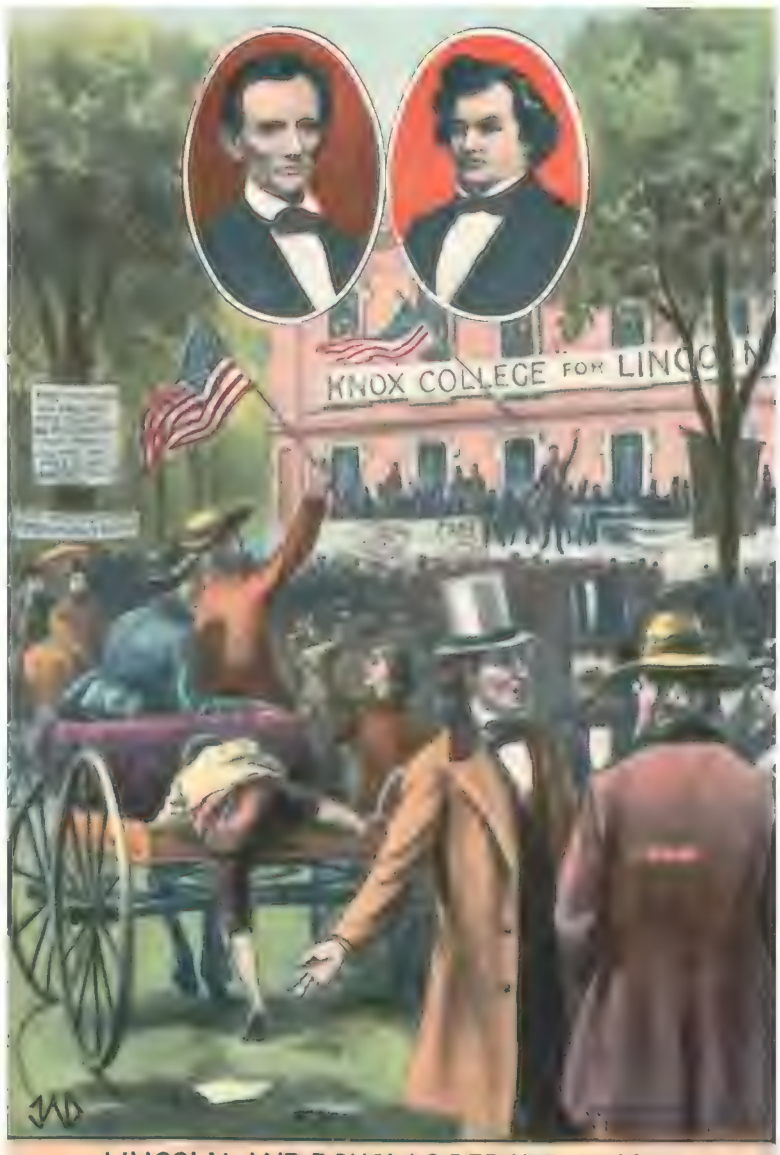
across the state—gazed out over busy docks piled high with bales and crates; riverboats belching smoke; and the mile-wide Mississippi. Here, Lincoln hoped to administer a coup de grace. "Lincoln was vibrant," says Huber. "Douglas was liquored up and near the point of collapse." (He was known to have a drinking problem.) His voice was weak; his words came out in barks. "Every tone came forth enveloped in an echo—you heard the voice but caught no meaning," reported an eyewitness.

Lincoln hammered away at the basic immorality of slavery. "It should be treated as a wrong, and one of the methods of . . . treating it as a wrong is to make provision that it shall grow no larger," he declared, his high-pitched voice growing shrill. Nothing else had ever so threatened Americans' liberty and prosperity as slavery, he said. "If this is true, how do you propose to improve the condition of things by enlarging slavery—by spreading it out and making it bigger?" He then went on to the climax of the argument that he had been building since Galesburg: "It is the same spirit that says, 'You work and toil and earn bread, and I'll eat it.' No matter in what shape it comes, whether from the mouth of a king who seeks to bestride the people of his own nation and live by the fruit of their labor, or from one race of men as an apology for enslaving another race, it is the same tyrannical principle."



LINCOLN AND DOUGLAS DEBATE IN 1858.

LINCOLN'S APPEAL TO higher morality towered over Douglas' personal attacks. "Everyone knew that Lincoln had turned in a stellar performance, and that he had bested Douglas," says Guelzo. "He managed not only to hold his own, but when they got to the end, Lincoln was swinging harder than ever."

Ultimately, says historian James Huston, Lincoln (above: in a c. 1860 image) "is speaking to the future, to the better angels of our own nature."

Still, our perception of the debates is skewed by our admiration for Lincoln. "We are all abolitionists today—in Lincoln's arguments we can see ourselves," says Douglas biographer James Huston. "We sympathize with his perception of the immorality of slavery. Lincoln is speaking to the future, to the better angels of our own nature, while Douglas was speaking in large part to the past, in which slavery still seemed reasonable and defensible."

But while Lincoln may have won the debates, he lost the election. The "Whig Belt" went almost entirely for Douglas and the new legislature would re-elect Douglas 54 percent to 46 percent. Recent research by Guelzo tells a surprising story, however. By analyzing the returns district by district, Guelzo discovered that of the total votes cast for House seats, 190,468 were cast for Republicans, against 166,374 for Democrats. In other words, had the candidates been competing for the popular vote, Lincoln would have scored a smashing victory. "Had the districts been fairly apportioned according to population," says Guelzo, "Lincoln would have beaten Douglas black and blue." If the election was a triumph for anything, it was for gerrymandering.

Still, the debates introduced Lincoln to a national audience and set the stage for his dark-horse run for the Republican presidential nomination two years later. "Lincoln comes out of the debates a more prominent figure in Illinois and across the country," says historian Matthew Pinsker. "The key question facing him before the debates was: Can he lead a party? Now he has the answer: He can. He now begins to see himself as a possible president." Douglas had won re-election to the Senate, but his political prospects had been fatally wounded. In 1860, he would fulfill his ambition of winning the Democratic nomination for president, but in the general election he would win only one state—Missouri.

In the debates of 1858, Lincoln had also finally forced the coruscating issue of slavery out into the open. Despite his own remarks at Charleston, he managed to rise above the conventional racism of his time to prod Americans to think more deeply about both race and human rights. "Lincoln had nothing to gain by referring to rights for blacks," says Guelzo. "He was handing Douglas a club to beat him with. He didn't have to please the abolitionists, because they had nowhere else to go. He really believed that there was a moral line that no amount of popular sovereignty could cross."

Says Freeport's George Buss: "We can still learn from the debates. They're not a closed book."

PICTURE HISTORY

Read Lincoln's pre-debate negotiations with Douglas at Smithsonian.com/debates

LOST & FOUND

ANCIENT GOLD ARTIFACTS FROM AFGHANISTAN, HIDDEN FOR MORE THAN A DECADE, DAZZLE IN A NEW EXHIBITION

BY RICHARD COVINGTON

A CULTURAL CROSSROADS: From about 2200 B.C. to the second century A.D., Afghanistan was at the center of trade routes connecting the ancient world. An Indian-style carved ivory figure (above) of a woman standing on a mythical creature was found in a first-century A.D. storeroom in Begram. A 2,000-year-old clasp depicting Dionysus and Ariadne (right) reflects the blend of Greek and nomadic motifs typical of artifacts from the Bactrian Hoard .

KABUL, 2004

ON A HOT DAY IN LATE APRIL *some 30 archaeologists, cultural officials and National Museum of Afghanistan staffers crammed into a small office at the city's Central Bank. Before them was a safe, one of six containing a cache of 2,000-year-old gold jewelry, ornaments and coins from the former region of Bactria in northern Afghanistan. Fifteen years before, the treasure, known as the Bactrian Hoard, had been secretly removed from the museum and stashed in the bank's underground vault under the supervision of Omara Khan Masoudi, the museum's director. The handful of museum employees responsible for hiding it had risked their lives to protect the treasure from warring factions and looters in the wake of the 1989 withdrawal of Soviet forces from Afghanistan. In the years since, conflicting rumors had circulated about the objects. One version had departing Soviet troops spiriting them away to Moscow. Another held that they had been melted down to buy arms. A third had them sold on the black market. Now that the political situation had improved and an agreement had been reached with the National Geographic Society to conduct an inventory, the Bactrian gold would at last be brought back into public view.*

BREATHTAKING: In April 2004, an inventory team got its first look at the Bactrian gold artifacts found in 1978-79 by Viktor Sarianidi (front left) but hidden away for safekeeping since 1989.

Since keys to the safe could not be found, a locksmith had been summoned. It took just 15 minutes for him to penetrate it with a circular saw. As sparks flew, Fredrik Hiebert, an American archaeologist working for the National Geographic Society, held his breath.

"I could just imagine opening the safe to find a big, hot lump of melted gold," he recalls. "It was an incredibly emotional moment."

FOUR YEARS LATER, many of the artifacts—none of which were damaged in the opening of the safes—are the centerpieces of an exhibition at the National Gallery of Art in Washington, D.C. (through September 7). Co-organized by the National Geographic Society and the National Gallery of Art, with Hiebert as guest curator, "Afghanistan: Hidden Treasures From the National Museum, Kabul" will travel to the Asian Art Museum of San Francisco (October 24, 2008-January 25, 2009), the Museum of Fine Arts, Houston (February 22-May 17, 2009) and the Metropolitan Museum of Art in New York City (June 23-September 20, 2009).

Unearthed from four ancient sites, the show's 228 works (including more than 100 pieces from the Bactrian trove) reveal the extent of links in the years 2200 B.C. to A.D. 200 among Hellenistic, Persian, Indian, Chinese and nomadic cultures along the ancient Silk Road—trading routes stretching 5,000 miles from the Mediterranean Sea to China. A knife handle embossed with an image of a Siberian bear, for instance, and a diadem (opposite) festooned with gilded flowers similar to ones found in Korea both indicate far-flung stylistic influences.

Afghanistan's deputy culture minister, Omar Sultan, a former archaeologist, says he hopes the exhibition will call attention to the beleaguered country's untapped rich archaeological heritage. He estimates that only 10 percent of its sites have been discovered, though many, both excavated and not, have been looted. "Afghanistan is one of the richest—and least-known—archaeological regions in the world," says Hiebert. "The country rivals Egypt in terms of potential finds."

HILL OF GOLD

FASHIONED INTO CUPIDS, dolphins, gods and dragons and encrusted with semiprecious stones, the Bactrian pieces were excavated in 1978-79 from the graves of six wealthy nomads—Saka tribesmen from Central Asia, perhaps, or the Yuezhi from northwest China—at a site called Tillya Tepe ("Hill of Gold") in northern Afghanistan. The 2,000-year-old artifacts exhibit a rare blend of aesthetic influences (from Persian to Classical Greek and Roman) and a high level of craftsmanship. The diadem, a five-inch-tall crown of hammered gold leaf, conveniently folds for travel, and a thumb-size gold figure of a mountain sheep is delicately incised with curving horns and flaring nostrils.

Viktor Sarianidi, the Moscow archaeologist who led the joint Soviet-Afghan team that uncovered the graves, compares the impact of the find to the 1922 discovery of Tutankhamen's tomb. "The gold of Bactria shook the world of archaeology," he writes in the exhibition catalog. "Nowhere in antiquity have so many different objects from so many different cultures—Chinese-inspired boot buckles, Roman coins, daggers in a Siberian style—been found together in situ."

Sarianidi first came to the Bactrian plain in 1969 to search for traces of the Silk Road. After excavating ruins of a first-century A.D. city there, he stumbled across, and soon began uncovering, an Iron Age temple used for fire worship that dated from 1500 to 1300 B.C. While carting away earth from the temple mound in November 1978, a worker spied a small gold disk in the ground. After inspecting it, Sarianidi dug

THE BACTRIAN HOARD: Hundreds of 2,000-year-old golden artifacts were unearthed in 1978-79 from the graves of six nomads in the region once known as Bactria in northern Afghanistan. The objects reflect a mix of Silk Road styles: Chinese, Indian, Siberian, Persian, as well as Classical Greek and Roman art. Opposite, clockwise from top: a collapsible gold-leaf crown; a jeweled pendant depicting a "Dragon Master"; a headdress ornament in the form of a standing ram.

KENNETH GARRETT / NATIONAL GEOGRAPHIC SOCIETY; P. 73 THIERRY OLLIVIER / MUSÉE GUIMET (3); PP. 70-71 THIERRY OLLIVIER / MUSÉE GUIMET (2)

THE NATIONAL MUSEUM, KABUL: Museum director Omara Khan Masoudi (above: with a statue that was smashed by the Taliban and later reconstructed) supervised the hiding of some of the museum's most important ancient artifacts in an underground vault in 1989. Heavily damaged by rocket attacks and looting during the factional conflicts of the 1990s, the museum (right) has recently been rebuilt.

deeper, slowly revealing a skull and skeleton surrounded by gold jewelry and ornaments—the remains of a woman, 25 to 30 years old, whom he called a nomadic princess. He subsequently found and excavated five additional graves, all simple trenches containing lidless wooden coffins holding the remains of once ornately attired bodies. Over the next three months, he cleaned and inventoried more than 20,000 individual items, including hundreds of gold spangles, each about the size of a fingernail.

In the grave of a chieftain—the only male found at the site—Sarianidi's team uncovered turquoise-studded daggers and sheaths and a braided gold belt with raised medallions that bear the image, some say, of Dionysus, the Greek god of wine, riding sidesaddle on a panther. (Others speculate it's the Bactrian goddess Nana seated on a lion.) Near the chieftain's rib cage, excavators found an Indian medallion that, according to Véronique Schiltz, a French archaeologist with the National Center for Scientific Research in Paris, bears one of the earliest representations of Buddha. The man had been buried with his head resting on a gold plate on a silk cushion. Around him lay two bows, a long sword, a leather folding stool and the skull and bones of a horse.

In a nearby grave, the archaeological team found the remains of a woman in her 30s wearing signet rings with images of Athena, the Greek goddess of wisdom, and a pair of matching jeweled pendants with gold figures grasping S-shaped dragons, as if to tame them. Another grave, that

KENNETH GARRETT; TILO DRIESSEN; MAP: GUILBERT GATES

A 4,000-YEAR-OLD BURIAL: By the beginning of the Bronze Age (2200 B.C.), an urban culture had developed in Afghanistan; archaeologists call it the Oxus civilization. In 1966, farmers near the northern village of Fullol came upon a burial site containing the first evidence of that civilization in Afghanistan, including bowls (above) thought to be made of local gold but bearing imagery from distant Mesopotamia.

THIERRY OLLIVIER / MUSÉE GUIMET

of a teenage girl, contained thin gold shoe soles (meant, says Hiebert, for the afterlife), along with a Roman coin minted in the early first century A.D. in Gallic Lugdunum (present-day Lyon, France). Schiltz says the coin probably came to southern India by sea before ending up with the woman through trade or as booty.

Schiltz also speculates that the nomads had migrated south from Central Asia or China and ended up plundering the Greco-Bactrian cities. The opulent jewelry that accompanied their burials, she says, indicates that the group belonged to a ruling family. The graves apparently survived intact because they were well concealed in the ruins of the Iron Age temple.

Archaeological evidence about nomadic groups is rare, for obvious reasons. The Tillya Tepe graves contained the first examples of nomadic art to be found in Afghanistan. Initially Hiebert thought the nomads had acquired the artifacts by "cherry-picking the Silk Road," he says. But after inventorying the objects, he was persuaded by their similarities that they all came from a single local workshop.

"That meant that these nomads took iconography from Greece, Rome, China, India, even as far away as Siberia, and put it together into their own unique and highly refined art style," he says. "They were creators, not merely collectors." He suspects that the workshop lies buried near the tombs.

In late 1978, just before the outbreak of widespread civil war in Afghanistan, armed tribesmen began threatening the dig. By February 1979, the political situation and the impending onset of winter caused Sarianidi to abandon the site before he could excavate a seventh grave; it would later be stripped by looters. Sarianidi crated up the artifacts he had found at the site and brought them to the National Museum in Kabul, where they remained until their removal to the bank vault in 1989.

GOLDEN BOWLS

THE OLDEST PIECES in the National Gallery exhibition, which date from 2200 to 1900 B.C., were found in Tepe Fullol, also in northern Afghanistan, in July 1966, when farmers there accidentally plowed up a Bronze Age grave, then began divvying up the priceless artifacts with an ax. Local authorities managed to salvage a dozen gold and silver cups and bowls (along with some gold and silver fragments), which they turned over to the National Museum. Jean-François Jarrige, director of Paris' Guimet Museum and a Bronze Age specialist, says that the bowls are connected to the craftsmanship of what is known as the Bronze Age Oxus culture, which existed within a large geographic area in Central Asia encompassing what is now Turkmenistan, Uzbekistan and Afghanistan. The geometric "stepped-square" motifs on one goblet, for instance, resemble designs uncovered in Turkmenistan and Uzbekistan, and the gold itself likely came from Central Asia's Amu Darya River (known in antiquity as the Oxus). But although these bowls have something of a local character, says Jarrige, "they also show signs of outside influences . . . in particular the representation of bearded bulls reminiscent of a

Author **RICHARD COVINGTON** *lives outside Paris and writes frequently on art, culture, the environment and social issues.*

OUTPOST OF GREEK CULTURE: The city of Ai Khanum, founded c. 300 B.C. by one of Alexander the Great's generals, was fortified with massive ramparts (above: buried remnants of the north walls, c. 1964-65). Greek and local traditions merged in the city to create a distinctive artistic style. Opposite, clockwise from top: a gilded silver plaque with the Greek goddess Cybele riding in a Persian-style chariot; a waterspout in the form of a comic mask; a Corinthian capital.

DAFA / MUSÉE GUIMET; P. 77 THIERRY OLLIVIER / MUSÉE GUIMET (3)

generally recognized theme from Mesopotamia." The designs on these bowls, write the curators, "include animal imagery from distant Mesopotamian and Indus Valley (present-day Pakistan) cultures, indicating that already at this early date, Afghanistan was part of an extensive trade network."

GREEKS BEARING GIFTS

ONE OF THE MOST IMPORTANT ancient cities in Afghanistan was discovered in 1964 at Ai Khanum, also in the northern region formerly known as Bactria. Founded around 300 B.C. by Seleucus I, a Macedonian general who won a power struggle to control the region following the death of Alexander the Great in 323 B.C., the city became the eastern outpost of Greek culture in Asia. Its artifacts reflect Greek and Indian, as well as local, artistic traditions. Works featured in the exhibition include a seven-inch-high bronze figure of Hercules and a gilded silver plaque that combines Greek and Persian elements (opposite). It depicts Cybele, the Greek goddess of nature, riding in a Persian-style chariot, shaded by a large parasol held by a priest.

Like Tillya Tepe and Tepe Fullol, Ai Khanum was also discovered by chance. While out hunting game in 1961 near the border with the then Soviet Tajik Republic (present-day Tajikistan), the last Afghan king, Zahir Shah, was presented with a carved chunk of limestone by local villagers. The king later showed the fragment to Daniel Schlumberger—then the director of a French archaeological expedition in Afghanistan—who recognized it as coming from a Corinthian, likely Greek, capital. (A similar capital is displayed in the show.) In November 1964, Schlumberger led a team to Ai Khanum, where, after digging up shards bearing Greek letters, he began excavations that continued until the Soviet invasion in December 1979.

Shaped like a triangle, roughly a mile on each side, the city, which was strategically located at the junction of the Oxus and Kokcha rivers, was dominated by an acropolis situated on a flat-topped, 200-foot-high bluff. Its huge entry courtyard was surrounded by airy colonnades supported by 126 Corinthian columns. Beyond the courtyard lay reception halls, ceremonial rooms, private residences, a treasury, a large bathhouse, a temple and a theater.

As in nearly every Greek city, there was a gymnasium, or school, and in it excavators found two sundials that appear to have been used to teach astronomy. Unusually, one of them was calibrated for the Indian astronomical center of Ujjain, at a latitude some 14 degrees south of Ai Khanum—an indication, says Paul Bernard, a member of the French excavation team, of scholarly exchanges among Greek and Indian astronomers.

Based on Indian works discovered at the site, Bernard believes that in the second century B.C., Ai Khanum became the Greco-Bactrian capital city Eucratidia, named for the expansionist king Eucratides, who likely brought the

04.143

A SILK ROAD TRADING CENTER: Alexander the Great is thought to have founded the city of Alexandria of the Caucasus, known today as Begram, in 329 B.C. The site was first excavated in 1937 and 1939 (above), and two rooms, now believed to be a merchant's shop, were found. The rooms' contents included (opposite, clockwise from top): carved ivory plaques; a glass beaker painted with a scene of men and women gathering dates; a small bronze mask of Silenus.

pieces back from India as spoils from his military campaigns there. After a century and a half as an outpost of Hellenistic culture in Afghanistan, the city came to a violent end. Eucratides was murdered in 145 B.C., apparently touching off a civil conflict that left the city vulnerable to marauding nomads, who burned and destroyed it the same year. Sadly, the archaeological site of Ai Khanum met a similar fate; it was looted and nearly obliterated during the years of Soviet occupation and civil strife in Afghanistan.

A FORTRESS IN THE HINDU KUSH

IN 329 B.C., Alexander the Great is believed to have established the fortress city of Alexandria of the Caucasus in a lush river valley south of the Hindu Kush mountains about 50 miles north of Kabul. Now known as Begram, the city was an important trading center for the Greco-Bactrian kingdom from about 250 to 100 B.C. and continued to thrive under the Kushan Empire that arose in the first century A.D.

According to Sanjyot Mehendale, a Near Eastern authority at the University of California at Berkeley, the Roman glass and bronze, Chinese lacquer and hundreds of Indian-style ivory plaques and sculptures unearthed at Begram in 1937 and 1939 suggested that the city had been a major commodities juncture along the Silk Road. Although French archaeologists Joseph and Ria Hackin, who excavated the site, concluded that Begram was the summer residence of the Kushan emperors, Mehendale believes that two sealed rooms containing what the Hackins called "royal treasure" were actually a merchant's shop or warehouse.

The glassware and bronze, she says, likely arrived by sea from Roman Egypt and Syria to ports near present-day Karachi, Pakistan, and Gujarat in western India, and were then transported overland by camel caravan. The exhibition's Begram section includes plaster medallions depicting Greek myths; ivory plaques recounting events from the life of Buddha; and whimsical fish-shaped flasks of blown colored glass.

IN RETROSPECT, National Museum of Afghanistan director Omara Khan Masoudi's decision to hide the Bactrian Hoard and other archaeological treasures in 1989 seems fortuitously prescient. Once an impressive cultural repository, the Kabul museum suffered massive damage and extensive looting during the factional conflicts of the 1990s. Then, in March 2001, the Taliban rampaged through the museum, smashing sculptures of the human form it viewed as heretical, destroying more than 2,000 artifacts. Although the National Museum was recently rebuilt with foreign assistance, it is not safe enough to display the country's most valuable treasures. The museum has received funds from the current exhibition tour, and there is a proposal to build a new, more secure museum closer to the center of Kabul, but it will be years before such a project can even be started. During the past year, about 7,000 visitors came to the museum; the numbers seem to matter less than the symbolic importance of keeping the building open. "The war destroyed so much," says Masoudi, "so whatever we can do to show off our ancient civilization—here and abroad—makes us proud."

Masoudi and Said Tayeb Jawad, Afghanistan's ambassador to the United States, believe the current exhibition represents a cultural reawakening and, perhaps, even a turning point. "We hope this exhibit will help overcome the darkness of Afghanistan's recent history," says Jawad, "and shed some light on its rich past, thousands of years old, as a crossroads of cultures and civilizations."

See additional Afghan art treasures at Smithsonian.com/afghanart

DAFA / MUSÉE GUIMET; P. 78 THIERRY OLLIVIER / MUSÉE GUIMET (3)

Photographer Nakki Goranin shows how the once ubiquitous photobooth captured the many faces of 20th-century America

FOUR FOR A QUARTER

BY KENNETH R. FLETCHER

NAKKI GORANIN AND I SQUEEZE INTO A CRAMPED PHOTOBOOTH in a Vermont shopping mall and practice our expressions. Goranin, a veteran, tries out some wacky poses, sticking her tongue out and squinting at the lens. I'm a bit more inhibited and, as the camera clicks off four shots, stick with a bemused smile. A minute later, the machine spits out a photo strip.

"I love them," says Goranin of the photos. "They're the real Nakki." Goranin, who lives in Burlington and has just published an illustrated history of the machine, *American Photobooth*, asks me to sign and date the back of the strip, just as she did in the late 1960s growing up in Chicago and sharing photobooth photos with her friends.

The routine is familiar to the generations of Americans who documented everyday moments by jumping inside a booth and popping a quarter into the slot. Still, Goranin doesn't much care for the mall's machine, which is digital—the print quality is not what it used to be. But, she says, there are only about 250 authentic chemical booths left in the United States, and she knows of none available to the public in Vermont.

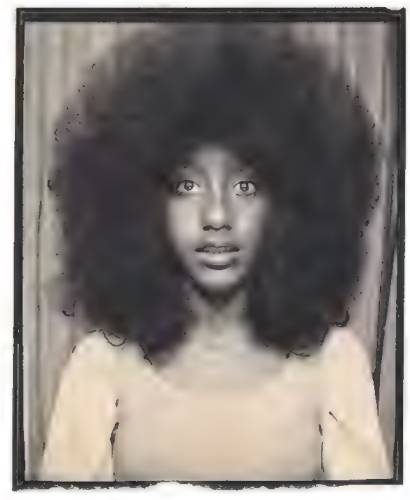
As Goranin, a photographer and self-described romantic, sees it, photo strips tell the story of 20th-century American history from the ground up. The images in her new book, culled from thousands she has collected at auctions, flea markets and antiques stores, show down-at-the-heels farmers in overalls, wartime sweethearts and 1950s boys with greased hair and ducktails. She

Photobooths, says Goranin (below), "brought a tremendous amount of happiness to a lot of people."

LEFT: CALEB KENNA; EDIE SEDGWICK PHOTOBOOTH PORTRAIT, 1966 © GERARD MALANGA

MAGIC MOMENTS CAUGHT IN TIME

"People don't understand the historical or fine arts value of photobooths," says Goranin, a photographer who sought refuge in photobooths after her mother died, then spent nearly a decade scouring flea markets and antiques stores to collect thousands of images (left: actress and Andy Warhol protégée Edie Sedgwick, 1966; above: parting sweethearts). "They tell so much about the country and what we've gone through," Goranin says.



"For 25 cents people could go and get some memory of who they were. For many people, those were the only photos of themselves that they had."

By the late 1950s, photobooths like this Auto-Photo Co. model boasted Art Deco designs made of wood or painted metal.

points out a photo of a World War II-era couple kissing passionately. "Day before he left," the notation reads.

Before the photobooth first appeared, in the 1920s, most portraits were made in studios. The new, inexpensive process made photography accessible to everyone. "For 25 cents people could go and get some memory of who they were, of a special occasion, of a first date, an anniversary, a graduation," Goranin says. "For many people, those were the only photos of themselves that they had."

Because there is no photographer to intimidate, photobooth subjects tend to be much less self-conscious. The result—a young boy embracing his mother or teenagers sneaking a first kiss—is often exceptionally intimate. "It's like a theater that's just you and the lens," Goranin says. "And you can be anyone you want to be."

Goranin's photobooth obsession began after her mother died in 1999. She needed to continue her photography, but couldn't focus on her work or bring herself to go back into the darkroom. Frequenting photobooths was the answer, she says. After a while, Goranin got the idea to publish her collection of self-portraits—now part of the permanent collection of the International Center for Photography in New York City—along with a brief history of the machine. But she was surprised by the dearth of information about the machine's origins or development; she set off from her cozy white Vermont house to see what she could discover for herself. That was nine years ago.

Goranin pored through microfilm of old newspapers. She drove back and forth across the United States and Canada interviewing anyone connected with the business that she could track down. When she telephoned the son of a long-dead early photobooth operator, she learned that only the day before, he had thrown away a trove of vintage photographs and business records. Goranin persuaded

KENNETH R. FLETCHER *last wrote about Richard Misrach's beach images.*

Senator John F. Kennedy (top: with Jackie, c. 1953) and Elvis Presley (c. 1954)

A CROSS SECTION OF AMERICA

"Behind the curtain, people could be themselves or become who they wanted to be," says Goranin, who is herself restoring two photobooths and whose photobooth self-portraits are part of the permanent collection of the International Center for Photography in New York City. Among the many images she has collected in travels across the United States—and one to which she is especially drawn—is that of the sad, strong faces of two young Depression-era farmers in overalls (below left). Says Goranin: "I'd like to believe they went on to lead happy lives."

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FRAMES FROM A HOME MOVIE

"When I look at photobooth images, stories come into my mind," says Goranin, thinking, perhaps, of the sad-eyed, neatly coifed little girl (above). "It's like seeing frames in a home movie." The automatic photobooth machine was perfected by an enterprising Siberian immigrant, Anatol Josepho, in the 1920s. His "Photomaton" studio opened in 1926 and was an immediate hit.

Step inside Nakki Goranin's photobooth collection on video at Smithsonian.com/photobooth

Because there is no photographer to intimidate, subjects tend to be much less self-conscious. "It's like a theater that's just you and the lens," Goranin says.

him to climb into a Dumpster to retrieve the items. Goranin even bought her own fully functioning 1960s-era photobooth and is now restoring two others that she also purchased.

The history she eventually put together chronicles the rapid rise and remarkable longevity of the machine. In the 1920s, an enterprising Siberian immigrant named Anatol Josepho perfected a fully automated process that produced a positive image on paper, eliminating the need not only for negatives but for operators as well. His "Photomaton" studio, which opened in 1926 on Broadway in New York City, was an immediate hit. Crowds lined up to pay 25 cents for a strip of eight photos. Within a few years, photobooths could be found from Paris to Shanghai.

Even amid the worldwide depression of the 1930s, the photobooth continued to grow. Entrepreneurs who couldn't afford to buy the real thing built their own versions, some out of wood, then hid a photographer in the back who shot and developed the pictures and slipped them through a slot. The unsuspecting subjects were none the wiser.

By mid-century, photobooths were ubiquitous. Jack and Jackie Kennedy stepped into one in the 1950s. Yoko Ono and John Lennon included a reproduction strip with their 1969 recording, "Wedding Album." In the 1960s, Andy Warhol shuttled models with rolls of quarters from booth to booth in New York City. A 1965 *Time* magazine cover features Warhol's photobooth portraits of "Today's Teen-Agers."

These days digital photobooths, which became available in the 1990s, let users add novelty messages and backgrounds and delete and retake shots. Allen Weisberg, president of Apple Industries, which has manufactured digital booths since 2001, says digital photobooth sales continue to grow. "Photobbooths have made a tremendous resurgence," he says. "It's like apple pie and baseball. It's part of our heritage."

The digital booths are being used in new ways. Lately, a number of companies have popped up offering rentals of lightweight, portable photobooths for use at weddings and parties.

But Goranin and other purists long for the real McCoy with its distinctive smell, clanking machinery and the fraught anticipation that comes with waiting for the photos to appear. A Web site, Photobooth.net, documents the locations of a dwindling number of these mechanical dinosaurs.

"The old chemistry booths, which I love, are becoming harder and harder to find," says Goranin. "But the [digital] booth is still a fun experience. You still get great photos. You still have a wonderful time in them. You still have the old-fashioned curtains that you can draw and that sense of mystery." Goranin smiles. "There's nothing in the world like a photobooth."

Andy Warhol used photo strips to create a pop art effect for a 1965 *Time* cover story, "Today's Teen-Agers."

DO YOU HAVE A PHOTOBOOTH PICTURE?

If you would like to share one of your photobooth images with Smithsonian readers, go to Smithsonian.com/photobooth for instructions.

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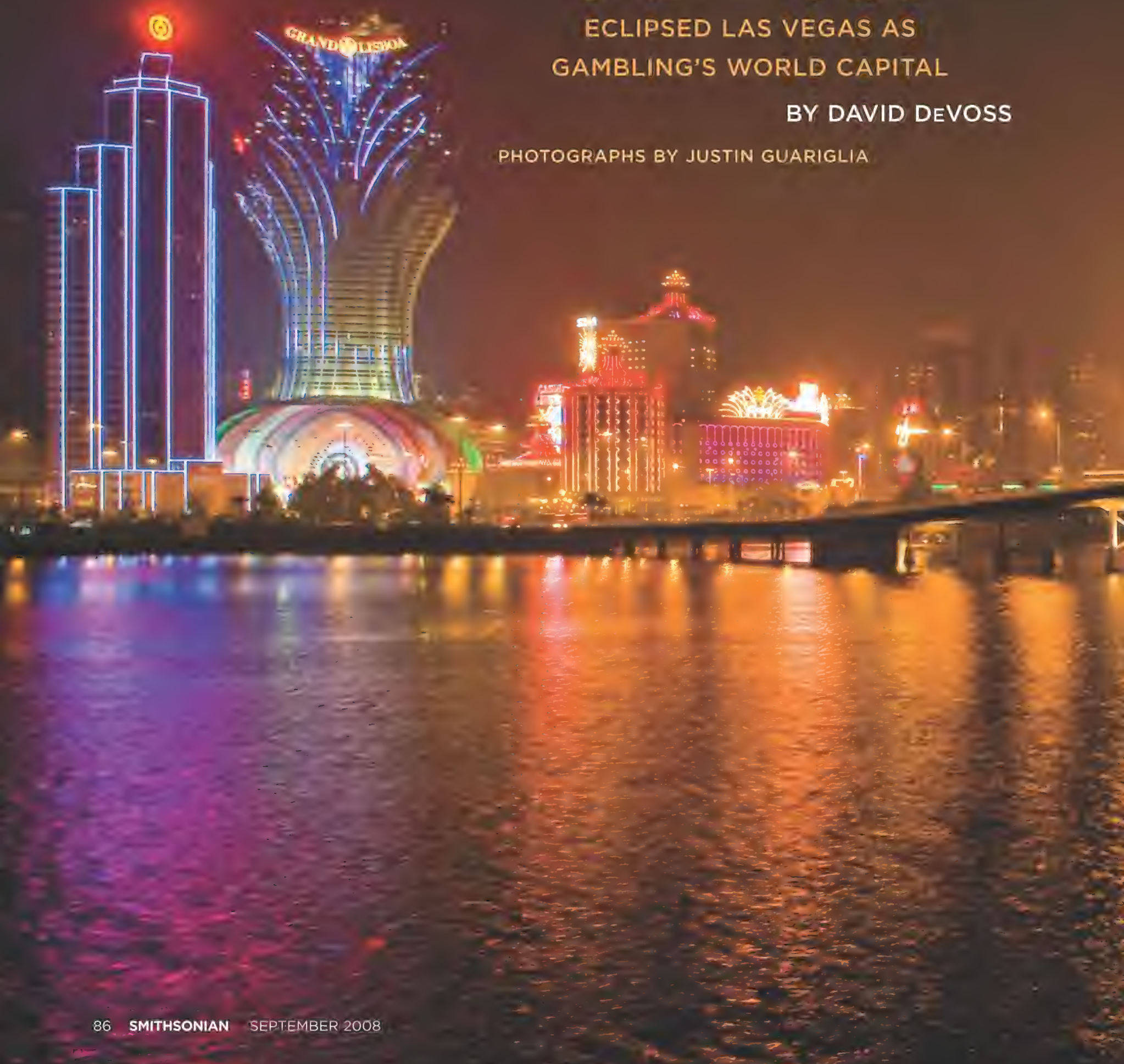
MACAU HITS THE

IN JUST FOUR YEARS, THIS 11-SQUARE-MILE OUTPOST ON THE COAST OF CHINA ECLIPSED LAS VEGAS AS GAMBLING'S WORLD CAPITAL

BY DAVID DEVOSS

PHOTOGRAPHS BY JUSTIN GUARIGLIA



JACKPOT

"Just the tip of the iceberg," a gambling executive says of the $10.5 billion wagered last year in Macau. The ongoing boom will see seven new mega-resorts go up in the city by 2011.

IT'S SATURDAY NIGHT and jet foils are pulling into Macau's ferry terminal every 15 minutes, bearing crowds from Hong Kong and the Chinese city of Shenzhen, each about 40 miles distant. A mile to the north, arrivals by land elbow their way toward customs checkpoints in a hall longer than two football fields. By 9 o'clock, visitors will arrive at the rate of some 16,000 an hour. They carry pockets full of cash and very little luggage. Most will stay one day or less. They will spend almost every minute in one of Macau's 29 casinos.

On their way to the hospitality buses that provide round-the-clock transit to the casinos, few of the land travelers will give more than a glance to a modest stone arch built in 1870 by the Portuguese, who administered Macau for almost 450 years.

After its heyday in the 17th century, the city (in 1875) began a long decline.

Outside the two-year-old Wynn Macau casino, a bus pulls up by an artificial lake roiling with bursts of flame and spouting fountains. The passengers exit to the strains of "Luck Be a Lady Tonight." But inside, the Vegas influence wanes. There are no lounge singers or comedians, and the refreshment consists mainly of mango nectar and lemonade served by middle-aged women in brown pantsuits. Here, gambling rules. This 11-square-mile outpost on the Pearl River Delta is the only entity on the Chinese mainland where gambling is legal. And now, almost ten years after shedding its status as a vestige of Portugal's colonial past and re-entering China's orbit, Macau is winning big. "In 2006 Macau surpassed Las Vegas as the biggest gaming city in the world," says Ian Coughlan, Wynn Macau president. "More than $10.5 billion was wagered [last year], and that's just the tip of the iceberg."

Coughlan is guiding me past rooms with silk damask wallcoverings, hand-tufted carpets and taciturn guards. "Here's our Chairman's Salon," he says. "The minimum bet here is 10,000 Hong Kong dollars [about $1,300 U.S.], so it's very exclusive gaming." But the 25th-floor Sky Casino is his favorite. "It's for people who can afford to lose a million dollars over a 24-hour period," he confides. "God bless them all."

TOP: COLLECTION GÉRARD-LÉVY, PARIS / ADOC-PHOTOS / ART RESOURCE, NY

On a Saturday night, Macau's land border may process as many as 16,000 visitors an hour—and the gate is about to be expanded to accommodate more.

I FIRST VISITED MACAU 30 years ago to report on criminal gangs called triads, then responsible for much of the city's violent crime and loan-sharking. Brightly painted shops that once served as brothels ran the length of Rua da Felicidade in the old port district. Around the corner, on Travessa do Ópio, stood an abandoned factory that had processed opium for China. A mansion built by British merchants early in the 19th century was still standing, as was the grotto where in 1556 Portuguese poet Luis de Camões is said to have begun *Os Lusiadas*, an epic tale of Vasco da Gama's explorations of the East.

In 1978, residents described the place as "sleepy"; its only exports were fish and firecrackers. Four years earlier, Portugal had walked away from its territories in Angola, Mozambique and East Timor and by 1978, was trying to extricate itself from Macau as well. Secret negotiations concluded in 1979 with an agreement stipulating that Macau was a Chinese territory "under Portuguese administration"—meaning that Portugal relinquished the sovereignty it seized after the Opium War in the 1840s but would run the city for 20 more years. The Portuguese civil servants, army officers and clergy then living there seemed content to take long lunches and allow their enclave to drift. The police, who wore trench coats and rolled their own cigarettes, allowed me to tag along on what was described as a major triad sweep. But after several desultory inspections of brothels (more discreetly run than their Rua da Felicidade forerunners), they grew tired of the game and headed for the Lisboa Casino, a seedy, threadbare place where men in stained singlets placed bets alongside chain-smoking Chinese prostitutes.

Gambling in Macau (c. 1900) was first licensed in the 1850s.

The Lisboa belonged to Stanley Ho, the richest man in town thanks to a government-sanctioned gambling monopoly and his control of the ferries linking Macau to the outside world. But the Macau police showed little interest in Ho, and police officers were barred from frequenting his 11 casinos. So after a quick look around, Macau chief of security Capitão Antonio Manuel Salavessa da Costa and I headed for a drink at a nightclub.

"We can't do anything here," he sighed, looking about the room. "In Macau today the triads are out of control because they're getting into legal businesses. That guy over there is here to protect the place. Those four near the band are his soldiers."

Macau's prospects changed little over the next two decades. Despite Ho's casinos, visitors numbered about 7 million a year to Hong Kong's 11.3 million in 1999. Almost half the hotel rooms were empty. Gangland murders occurred with

TOP: ADOC-PHOTOS / ART RESOURCE, NY

numbing regularity. For much of that time, Macau's gross domestic product grew more slowly than Malawi's.

But in 1999, the year Portugal formally handed administration of Macau back to the Chinese, the city became a "special administrative region," like Hong Kong after the British turned it over two years earlier. The designation is part of China's policy of "one country, two systems," under which it allows the newly reunited entities autonomy over their own affairs, except in foreign policy and national defense. In 2002, the new Macau government ended Ho's 40-year gambling monopoly and allowed five outside concessionaires, three of them American, to build competing resorts and casinos that would both reflect—and accommodate—China's growing wealth and power. Beijing also made it easier for mainland Chinese to enter Macau.

"China wanted Macau to have growth, stability, American management standards and an international appreciation of quality," says the director of the city's Gaming Inspection & Coordination Bureau, Manuel Joaquim das Neves, who, like many Macanese, has Asian features and a Portuguese name. "Beijing also wanted to show Taiwan that it is possible to prosper under the Chinese flag."

When the Sands casino opened in 2004, the first foreign operation to do so, more than 20,000 Chinese tourists were waiting outside. Stanley Ho—who rarely gives interviews and whose office did not respond to a request for one for

Macau's Portuguese legacy is seen in Senate Square (left), where the paving is designed to resemble waves; the city's Chinese roots are expressed at the opera (above). Henrique de Senna Fernandes (below), age 84, worries that Macau is becoming a city "where people talk only about money."

this article—was not amused. "We are Chinese, and we will not be disgraced," he was quoted as saying at the time. "We will not lose to the intruders."

The newcomers set the bar high. A mere 12 months after opening the Sands Macau, the Las Vegas Sands Corp. had recouped its $265 million investment and was building a grander emporium, the Venetian Casino and Resort Hotel. At 10.5 million square feet, the $2.4 billion complex was the largest building in area in the world when it opened in 2007 (a new terminal at Beijing's airport surpassed it this year). Its 550,000-square-foot casino is three times larger than Las Vegas' biggest.

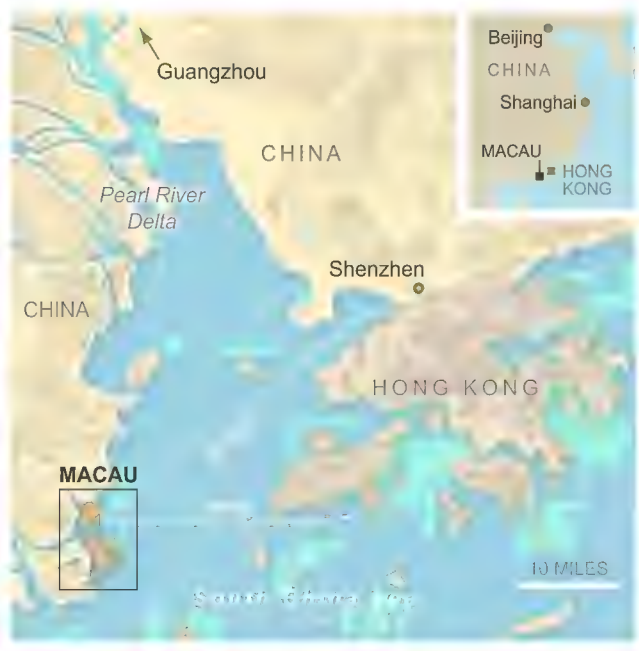
This year, Macau is on track to draw more than 30 million tourists—about as many as Hong Kong. At one point, so many mainland Chinese were exchanging their yuan for Macanese patacas that banks had to place an emergency order for more coins.

Macau's casino revenues for 2008 are expected to be 13.5 billion, 30 percent more than last year. By 2012, they are projected to outstrip the revenues of Atlantic City and the state of Nevada combined. With a population of just 531,000, Macau now has a GDP of more than $36,000 per capita, making it the wealthiest city in Asia and the 20th-richest economy in the world. Says Philip Wang, MGM's president for international marketing: "It took 50 years to build Las Vegas, and this little enclave surpassed it in four."

St. Paul's Church, completed c. 1630, symbolized Macau's place in the trading network developed by Portuguese merchants. But only the facade survived an 1835 fire.

And it did so despite its unusual relationship with China's communist rulers—or, perhaps, because of the rulers' unusual relationship with capitalism. On one hand, the Chinese government is so hostile to gambling that it prohibits Macau casinos from advertising even their existence in Chinese media. On the other, having such a juggernaut on its shores serves China's development goals. (All casino taxes—35 percent of gross revenue, plus 4 percent in charitable contributions—go to Macau.) Says MGM Mirage International CEO Bob Moon: "We're working with China to move the Macau business model beyond day-tripping gamblers to that of an international destination that attracts sophisticated travelers from the four corners of Asia."

THIS MODERN MAGNET was once called "The City of the Name of God in China, No Other More Loyal," at least by the Portuguese, after Ming dynasty Emperor Shizong allowed them to set up an outpost here in 1557. Jesuit and Dominican missionaries arrived to spread the Gospel, and merchants and sailors followed. Macau quickly became a vital cog in the Portuguese mercantile network that reached from Goa, on India's Malabar Coast, to Malacca, on the west coast of the Malay Peninsula, to the Japanese city of Nagasaki.



The Jesuits opened the College of Madre de Deus in 1594 and attracted scholars throughout Asia. By 1610, there were 150,000 Christians in China, and Macau was a city of mansions, with Portuguese on the hills and Chinese living below. Japanese, Indians and Malays lived beside Chinese, Portuguese and Bantu slaves, and they all rallied to defeat the Dutch when they tried to invade in 1622. There was little ethnic tension, partly because of intermarriage and partly because the Ming rulers, having never relinquished sovereignty, had a vested interest in the city's prosperity.

In the 1630s, the Portuguese completed St. Paul's Church, a massive house of worship with an elaborate granite facade surmounted by a carving of a ship with billowing sails watched over by the Virgin Mary. It was the grandest ecclesiastical structure in Asia. But the mercantile empire that funded Catholic evangelism fell under increasing attack from Protestant trading companies from Holland and Great Britain.

In 1639, Portugal was expelled from Japan and lost the source of silver it had used to purchase porcelain, silk and camphor at Cantonese trade fairs. The following year, the dual monarchy that had linked Portugal with Spain for 60 years ended, and with it went Macau's access to the Spanish-American galleon trade. The Dutch captured Malacca in 1641, further isolating Macau. Three years later, Manchu invaders toppled the Ming dynasty.

Macau's glory days were drawing to a close. In 1685, China opened three other ports to competition for foreign trade. By the time St. Paul's accidentally burned in 1835, leaving little beyond the facade, Macau Chinese outnumbered Portuguese six to one and the city's commercial life was dominated by the British East India Company. China's defeat in the Opium War, in 1842, ended the cooperation between the mandarins and the Portuguese. China ceded Hong Kong to Britain and, after nearly three centuries as a guest in Macau, Portugal demanded—and received—ownership of the city.

Still, Hong Kong continued to eclipse Macau, and by the early 20th century, the Portuguese city's golden age was but a memory. "Every night Macau grimly sets out to have fun," French playwright Francis de Croisset observed after visiting the city in 1937. "Restaurants, gambling houses, dance halls, brothels and opium dens are crowded together, higgledy-piggledy.

"Everybody at Macau gambles," de Croisset noted. "The painted flapper who is not a school girl but a prostitute, and who, between two brief spells of dalliance, wagers as much as she can earn in a night; . . . the beggar who has just managed to cadge a coin and now, no longer cringing, stakes it with a lordly air; . . . and finally, the old woman who, with nothing left to wager, to my amazement took out three gold teeth, which, with a gaping smile, she staked and lost."

The Portuguese legacy can still be found in Senate Square, the 400-year-old plaza where black and white cobblestones are arranged to resemble waves hitting the shore. Two of the colonial-era buildings surrounding the square are especially noteworthy: the two-story Loyal Senate, which was the seat of secular authority from 1585 to 1835, and the three-story Holy House of Mercy, an elaborate symbol of Catholic charity with balconies and Ionic columns.

"Prior to the transition [in 1999], I worried about the fate of Portugal's patrimony, but it seems China intends to protect our old buildings," says Macau historian Jorge Cavalheiro, although he still sees "an enormous task" ahead for preservationists. Indeed, the city is growing not by clearing old buildings, but by reclaiming new land from the sea.

Nowhere is that reclamation more evident than in the area called Cotai, which links two islands belonging to Macau, Taipa and Coloane. In Cotai, three of the six gambling concessionaires are spending $16 billion to build seven mega-resorts that will have 20,000 hotel rooms.

DAVID DEVOSS *has covered Asia for* Time *and the* Los Angeles Times. *One of* **JUSTIN GUARIGLIA***'s photographs of Singapore in the September 2007 issue won a Pictures of the Year award.*

MAP: JOHN TOMANIO

"This is the largest development project in Asia," says Matthew Pryor, the senior vice president in charge of more than $13 billion in construction for the Las Vegas Sands Corp. "Three of the world's five largest buildings will stand alongside this road when we're complete in 2011. Dubai has mega-projects like these, but here we had to create the land by moving three million cubic meters of sand from the Pearl River."

It's a bitterly cold day, and rain clouds hide the nearby Lotus Flower Bridge to China. But some 15,000 men are working round-the-clock to complete those 20,000 hotel rooms. They are paid an average of $50 a day. Nobody belongs to a union. "The Sheraton and the Shangri-La are over there," says Pryor, pointing to the skeletons of two reinforced-concrete towers disappearing into the clouds. "That cluster on the opposite side will contain a 14-story Four Seasons, 300 service apartments and a luxury retail mall I call the Jewelry Box."

Carlos Couto arrived in Macau in 1981 as the director of planning and public works and today runs the city's leading architectural firm, CC Atelier de Arquitectura, Lda. Couto has approved plans for nearly $9 billion worth of construction over the next four years. "Portuguese here are working harder than ever before," he says, "because China's 'one country, two systems' model depends on Macau becoming an international city."

Not everyone is pleased with the city's transformation. When Henrique de Senna Fernandes, an 84-year-old lawyer, looks out the window of his office building on what once was Macau Pria Grande, he sees not the languid quayside and bat-winged fishing junks of his youth but a forest of casinos and banks. "The sea used to be here," he sighs, looking at the sidewalk below. "Now all the fishing junks are gone, and Macau is just a big city where people talk only about money."

Perhaps that is inevitable when so much of it changes hands in such a confined space. U.S. investors are making more than enough in Macau to compensate for declines in Las Vegas. But Stanley Ho, now 86, has bested them. Last year his company, Sociedade de Jogos de Macau, led Macau gambling concessionaires with profits of $230 million. And his daughter Pansy, managing director of his company, Shun Tak Holdings, is a partner in the MGM Grand Macau.

Pansy Ho was born 45 years ago to the second of Ho's four wives. She attended prep school in California and received a degree in marketing and international business management from Santa Clara University. She then moved to Hong Kong, where she started a public relations firm and the local tabloids dubbed her "Party Girl Pansy."

Ho says her Las Vegas colleagues wanted to build a mass-market casino, skeptical that China was rich enough for VIP play. "So four years ago I took MGM's CEO to Shanghai, which was just beginning to show its glamour," Ho says. "I took him to galleries and restaurants and introduced him to billionaires in the making. Now MGM understands what the high-net-worth lifestyle is about."

Foreign investment has changed the character of development, but Macau owes most of its new prosperity to China. The economy of the People's Republic has grown more than 11 percent a year for more than a decade—in Guangdong, the province next to Macau, it's growing 25 percent a year. Shenzhen, across the Pearl River estuary north of Hong Kong, had 230,000 residents in 1980. Now it has 12 million.

Understanding the "high-net-worth lifestyle" is crucial, says Pansy Ho.

Few of today's Chinese visitors are old enough to remember the decade of crushing conformity that came with Mao Zedong's Cultural Revolution, which began in 1966. They are largely the pampered products of one-child families raised under a capitalistic form of communism, and they seem to revel in such touches as the solid gold bars embedded in the lobby floor of Macau Grand Emperor Hotel and the 33-foot-tall, 24-karat gold Tree of Prosperity that rises on the half-hour from beneath an atrium floor at the Wynn casino. Next to the Tree of Prosperity a hallway is lined with deluxe shops. On weekends, lines form outside the Louis Vuitton store, which routinely records monthly sales of $3 million. Watch and jewelry stores regularly achieve daily sales over $250,000. Says a foreign diplomat: "Westerners who come here cross into China to buy fakes, while the Chinese come here to buy the real stuff."

Macau airport is operating at nearly double its capacity, but with 2.2 billion people living within five hours' flying time, it's a good bet that the number will soon double again. Construction on a bridge linking Hong Kong, Macau and Zhuhai in southern China is scheduled to begin soon. Work has begun to expand Macau's northern border gate to accommodate 500,000 visitors a day.

For foreign gambling executives, the biggest challenge would seem to be matching Macau profits back home. "We just have to get more Chinese tourists into the U.S.," jokes Sands Corp. President William Weidner. "This way we can increase our revenues and balance the U.S. trade deficit by winning all the money back at the baccarat tables."

To learn more about the misadventures of Portugal's national poet Luis de Camões and his time in Macau, go to Smithsonian.com/camoes

Already the most densely populated city on the planet, Macau is expanding by reclaiming land from the sea on which to build the new resorts going up in the background.

PRESENCE OF MIND

Clan-Do Spirit

A genealogical surprise led the author to ask: What does it take to be one of the family? **BY JAKE HALPERN**

WHEN I WAS 20 YEARS OLD, I crammed my most valued possessions into a big purple backpack and moved to Prague. This was in the mid-1990s, when the city was buzzing with American expats—writers, artists, musicians, bohemians—searching for the modern-day equivalent of Hemingway's Paris. The city's gothic, winding, Escher-like streets were bustling with energy, but when it came to Jewish life, the city was a ghost town. Late at night I would walk through the vacant Jewish quarter, with its many moss-covered tombstones shrouded in fog, and I would feel like the last Jew alive.

One evening, I wandered into a dimly lit antiques shop behind Prague Castle and found a tray stacked with gold and silver rings bearing family crests. "What are these?" I asked the storekeeper.

"They are old family rings," she told me.

"Where did they come from?" I asked.

"From Jewish families," she answered curtly.

Eventually, as my loneliness and alienation mounted, I called my great-uncle back in the States and asked if we had any relatives left in Eastern Europe. "No," he said. "They all perished at the hands of the Nazis."

At that moment, and for a number of years afterward, I hated all things German. And so it came as quite a shock when I discovered, several months ago, that I might have

GINA TRIPLETT

Photo: Jørn Tomter

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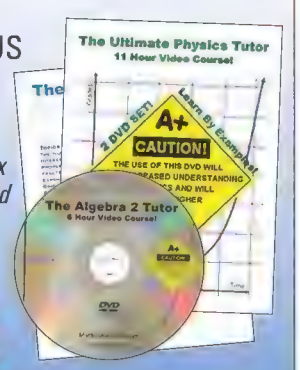

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The Plitt family history, kept by Irmgard Schwarz (left, at the 2007 reunion), goes back to 1560. But where, the author wondered, did he and Jane Plitt (center and right) fit in?

relatives in the Old World—blond-haired, blue-eyed, gentile relatives in Germany.

This information came from my mother's cousin, a devoted genealogist, who had learned about a large clan in Germany named Plitt. This was news to me, even though my mother's maiden name is Plitt, and my full name is Jacob Plitt Halpern. Apparently, this clan even had its own Web site, which traced the family's roots back to one Jacob Plitt, who was recorded in 1560 as paying taxes in the mountain town of Biedenkopf in the state of Hesse.

As last names go, Plitt is pretty unusual: according to the U.S. census, it ranks 28,422th in this country—well behind Jagodzinski, Przybylski, Berkebile and Heatwole. I had never known a Plitt outside my immediate family, but on the German Plitts' Web site I discovered that they held a family reunion every couple of years. Typically these gatherings are held in Germany, but the next one, I saw, was to be held in Rockville, Maryland, a suburb of Washington, D.C. A posting on the Web site noted that there would be special events featuring the Jewish side of the Plitt family.

In the coming weeks, I passed this information along to the other Plitts in my family. They took it tepidly. No one seemed excited by the prospect that our family tree might include a few gray-haired former Nazis who had been "rehabilitated" into Mercedes assembly-line managers. Yet, as much as I bristled at the thought of being related to this tribe of Germans, the thought of not attending seemed neurotic and provincial. Ultimately, I shamed myself into going. I even browbeat my mother and younger brother into going with me.

So one morning not long ago, I found myself in a conference room at the Rockville Hilton with two dozen putative relatives, listening to a woman named Irmgard Schwarz talk about the estimable history of the Plitts. Irmgard, one of a half-dozen German Plitts who had traveled to Maryland for the reunion, is the keeper of a massive tome that traces the family's lineage in meticulous detail back to the early days of the Renaissance. That rich a genealogy is highly unusual in Germany, where a number of armed conflicts, such as the Thirty Years' War (1618-48), destroyed many tax records and church archives.

Throughout the morning, Irmgard helped a number of American Plitts figure out how they were related, but there were a handful of attendees who had

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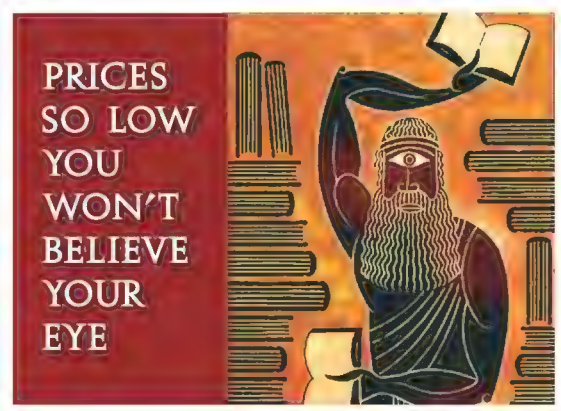

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"I hold on to the belief that there is a connection between the families," one of the gentile Plitts told me over lunch. "But it's just a feeling."

found no connection to the original Biedenkopf clan. Some of them were Jews who traced their origins to Bessarabia, or modern-day Moldova. Their ranks included an architect named Joel Plitt, an author named Jane Plitt and my mother, brother and me. We jokingly called ourselves the Lost Tribe of Plitt, and as the four-day gathering progressed, the mystery surrounding us seemed only to grow. "I hold on to the belief that there is a connection between the families," one of the gentile Plitts told me over lunch. "But it's just a feeling."

UNTIL RECENTLY, the German Plitts had had no idea any Jews shared their last name. In 2002, at the previous international Plitt reunion in Maryland, Jane Plitt became the first Jew to attend—only she didn't tell anyone that she was Jewish. "I was totally intimidated," Jane told me at the Rockville Hilton. One Plitt, she said, "asked me five times what church I attended. I never told him. I was very adept at changing the conversation." But Jane also befriended Irmgard at the 2002 reunion and, weeks later, broke the news to Irmgard in an e-mail.

Jane couldn't have picked a better confidante. "When I was 14 or 15 I began reading all of these books about Jews, and I built up a small library on Judaism," Irmgard later told me. "Very often, during this time I thought, I would like to be Jewish! Which is silly, because if I were Jewish, my family wouldn't have survived the war."

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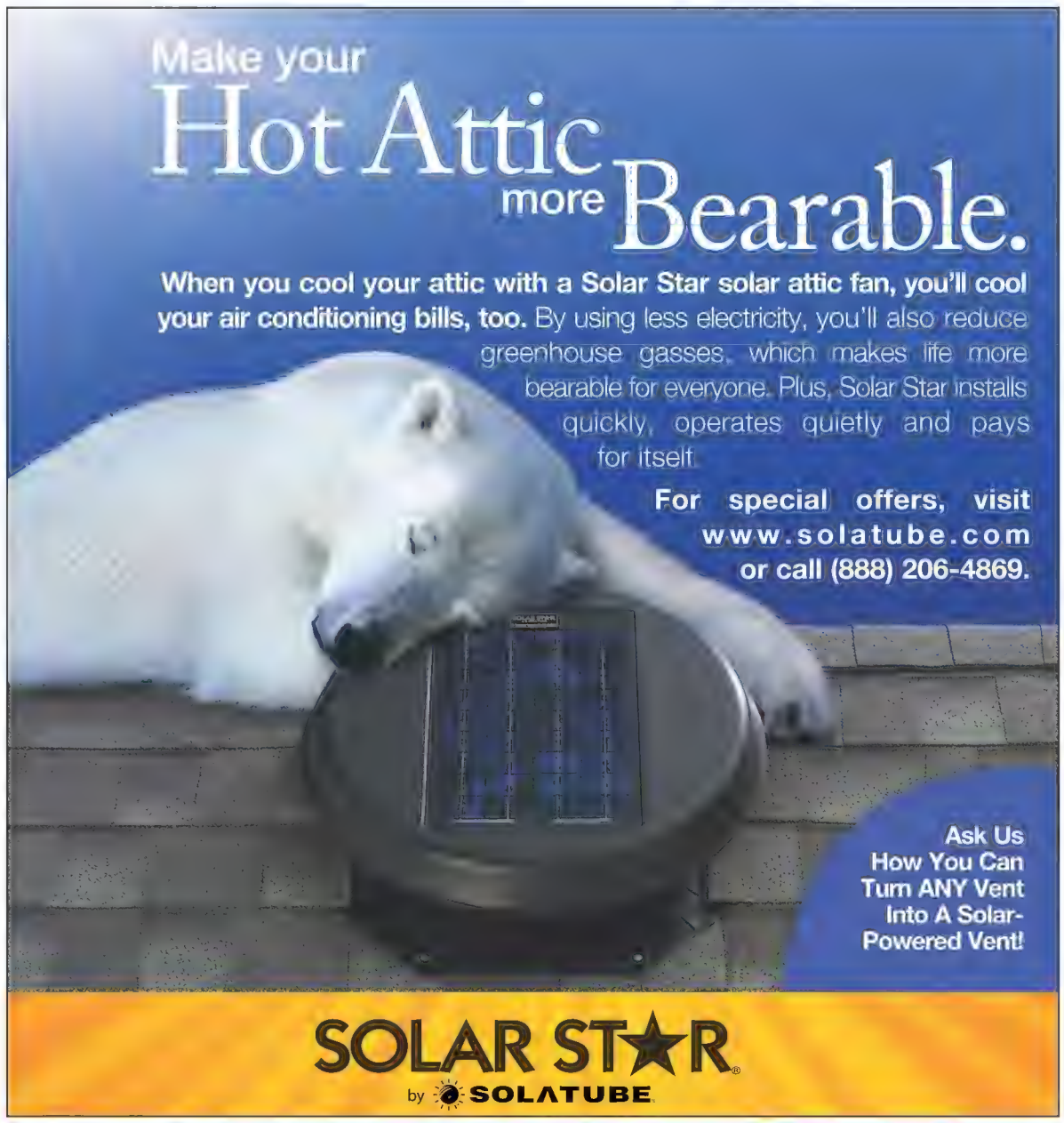
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"People were shocked" at the announcement, recalled one of the Plitts. "You could see it on their faces—they were like, *'Holy Moly!'* "

According to Irmgard, who was born in 1947, Germans still weren't talking much about the Holocaust when she came of age in the early 1960s. Her interest in this dark chapter of history was unusual, and she says that it became an "obsession." Many times, she said, she questioned her own parents about how they had spent those years, and she never accepted their claims that they had been powerless to challenge the edicts of the state. As an adult, she made five trips to Israel, and she entertained the fantasy that her son would marry a Jewish woman and provide her with Jewish grandchildren.

At the 2003 Plitt reunion, which was held at an ancient German monastery in Eltville, Irmgard stood up and announced, matter-of-factly, that there were Jews in the family. She even suggested that the entire family might originally have been Jewish. She left unmentioned the possibility that the Jewish and gentile Plitts were unrelated. On some level, Irmgard says, her intent was to rattle some of the older and more conservative family members. This she did.

"People were shocked," recalls Brian Plitt, a gentile Plitt from Washington, D.C. "You could see it on their faces—they were like, *Holy Moly!* There were some older people there who were in their 80s, and you could just see them shaking their heads: no, no, no."

In 2005, Jane Plitt went to Germany for that year's reunion. At the banquet that marked the high point of the gathering, the German Plitts

In his yearning for a family connection, the author saw Stars of David and shofars in the Plitts' coat of arms.

chanted the Hebrew song "Hevenu Shalom Aleichem," whose ancient lyrics go: "*We bring peace, peace, peace upon you.*" Jane was both surprised and moved. "I guess they had time for the idea to sink in," she told me.

By the time we Plitts had gathered in Rockville, any communal shock seemed to have subsided and been replaced by a pressing curiosity: Were we really related? And if so, how?

DURING A SEMINAR devoted to those questions, Jane and Irmgard offered two possibilities. The first, dubbed the "romantic theory," proposed that a young gentile Plitt had departed Biedenkopf, married a Jewish woman in Bessarabia and converted to her faith. The second, the "practical theory," held that the family's patriarch, Jacob Plitt, had converted from Judaism to Christianity or descended from someone who had.

According to Elisheva Carlebach, author of *Divided Souls: Converts From Judaism in Germany, 1500-1750*, neither theory is likely. The romantic theory is especially suspect, Carlebach later told me, because conversion to Judaism was considered heresy by the Church. The practical theory is also problematic. Jews who converted to Christianity almost always adopted a new last name, such as Friedenheim (meaning "freedom") or Selig (meaning "blessed"), to reflect their new identity.

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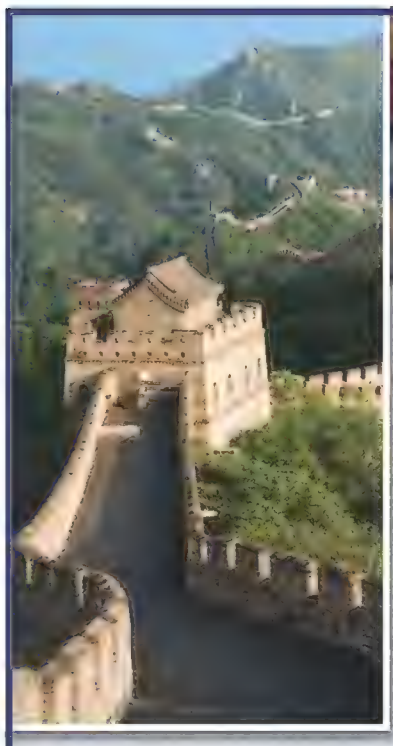

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I found Carlebach's skepticism bracing, and yet, to my surprise, some deeply sentimental part of me yearned for one of the two theories to be true. I suppose I hoped that the blood relationship itself would serve as proof that the ethnic and religious distinctions that we make among ourselves are ultimately arbitrary. And I was not the only one who felt this way.

In fact, I found no one at the reunion who acknowledged the possibility that our shared last name was simply a coincidence. We seized upon any and all commonalities—thyroid conditions, almond-shaped eyes, stubbornness, even entrepreneurial success—as signs of our shared heritage. The most exciting and mysterious "evidence" involved the Plitt coat of arms. At first glance, its iconography seemed straightforward: a shield, an anchor, a knight's helmet, several stars and two elephant trunks. Upon closer examination, however, I noticed that the stars are six-pointed, like the Star of David, and that the elephant trunks resemble shofars, the ritual horns of Israel. For a moment, I felt like Professor Robert Langdon in *The Da Vinci Code*. Only slowly did I realize how desperate I had become to find a connection to my fellow Plitts.

On the final day of the reunion, almost everyone made a field trip to the United States Holocaust Memorial Museum in Washington. I walked through the exhibits with Irmgard at my side, and we shared a prolonged and awkward silence. At one point, as we watched a short video about the Nazi Party, she told me that her father had been a member of the Sturmabteilung, or SA, a gang of thugs also known as the brownshirts or storm troopers, who were instrumental in Adolf Hitler's rise to power. "He joined early, in 1928, when he was just 20 years old," she said. "He never talked about it. In fact, I only discovered this through my sister, many decades later."

That night, as we gathered for one final dinner in the Hilton ballroom, Irmgard stood up and led us in a round

of Hebrew songs. She sang quite well, and her Hebrew was so good that she corrected my pronunciation of the final verse of "Shalom Chaverim."

"How do you know these songs so well?" I asked her.

"It's in the genes!" someone yelled out.

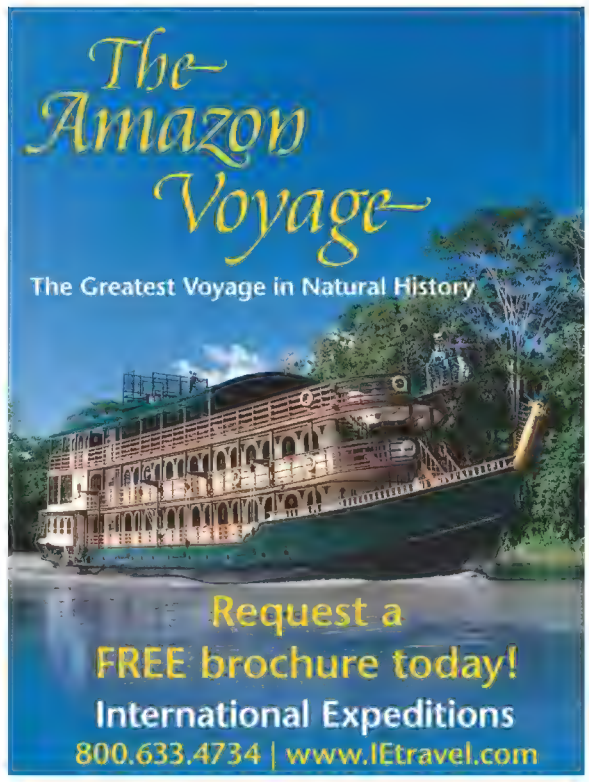
AS IT TURNS OUT, that's not likely. Shortly after our Rockville reunion, half a dozen Plitts, both Jewish and gentile, underwent DNA testing. (I did not participate because the test they used examines the Y chromosome and was therefore restricted to male Plitts. I am, of course, a Halpern.) According to Bennett Greenspan, the founder of Family Tree DNA, the testing service that we used, there is a 100 percent certainty that the Jews and gentiles who were tested have no common ancestor within the past 15,000 to 30,000 years.

I was disappointed, of course. But that feeling soon gave way to a vague sense of hope. After all, why should it take a bond of blood for human beings to regard one another as kin? Isn't it a greater feat to set aside old prejudices in the name of humanity? If our connection to one another were founded on choice rather than obligation, wouldn't it be a more meaningful bond?

We'll find out, we Plitts. The next gathering in the United States is scheduled for 2010. Irmgard has already told me she'll be there, and I know I will, too. My mother, who had her misgivings before her first Plitt family reunion, has volunteered her house in the Berkshires for this one.

Meanwhile, as word of the DNA results spread, Jane Plitt sent out an e-mail saying, "The Plitt branches are ancestrally distinct, but the choice to embrace each other as family, regardless of religion or DNA data, remains very real." I find it reassuring, if odd, that even news of ancestrally distinct DNA hasn't ruptured the "family."

JAKE HALPERN *is the author of* Fame Junkies: The Hidden Truths Behind America's Favorite Addiction. *He lives in Connecticut.*



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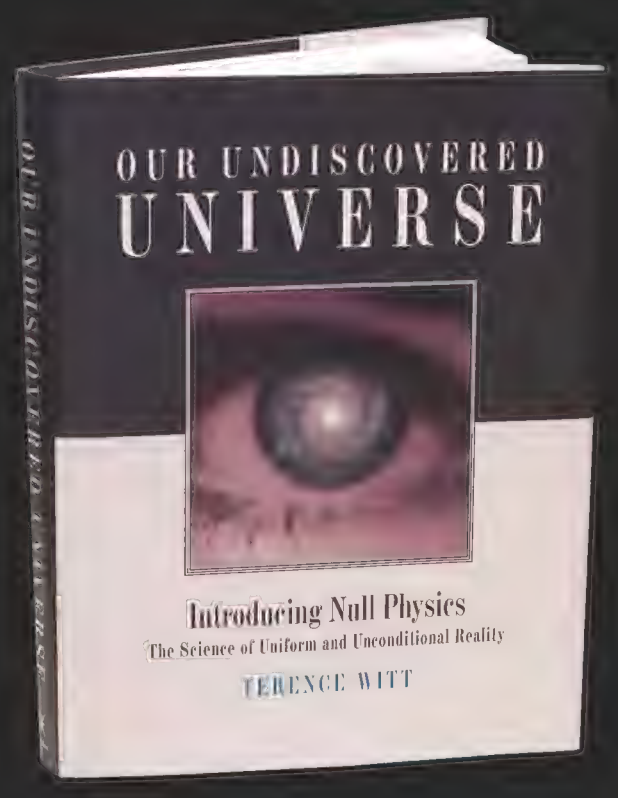

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Coins enlarged to show detail.

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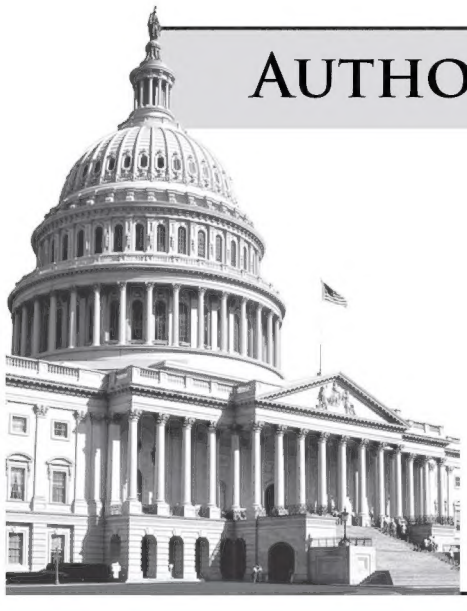

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- ❑ Poor Circulation
- ❑ Insomnia
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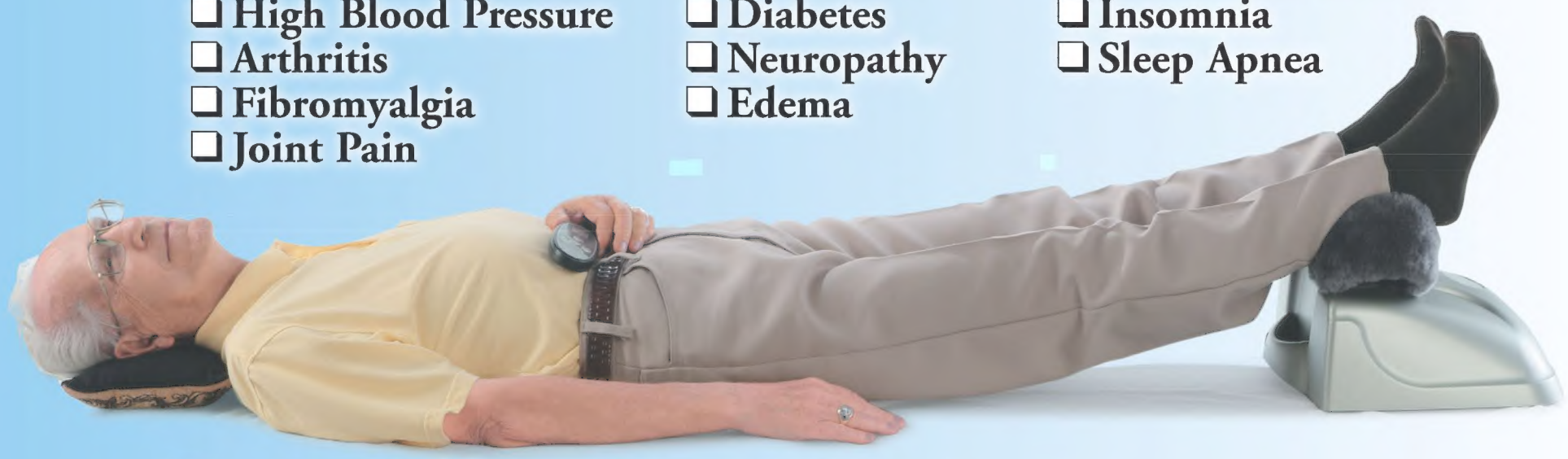

You will enjoy using the Exerciser 2000 *Elite*™

Receive some of the benefits of aerobic exercise without stress or impact on the joints!

Relaxation of the back muscles

Oxygenation of the blood

Increased mobility

Increase circulation throughout the body

Helps relieve stiffness from head to toe

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How Does the Exerciser 2000 Elite™ Work?

Enjoy the benefits of passive exercise—just lie down, place your ankles on the ankle rest and let the machine do the work.

When you turn the machine on, it creates a 2 inch, right to left movement that gently moves the body back and forth.

This gentle swinging motion cycles up through the whole body, creating an exercise movement without stress or impact on the joints.

Don't be fooled by cheap imitations

Features

- Weighs only 15 pounds
- 15" wide x 13.5" deep x 9.5" high
- ISO-9001 CERTIFIED
- FDA Class 1 Registered
- ETL Approval
- 5-speed operation
- 2 pre-programmed selections —one for relaxation and one for energizing
- Heavy duty, high torque DC motor
- Wide cushioned ankle rest
- 16 minute digital timer with safety shut-off
- **2 year parts and labor warranty**

What people are saying about the Exerciser 2000 Elite™

After using the Exerciser 2000 Elite™ twice a day for one week the swelling in my ankles went away. It has also helped my breathing, as I can get out and walk without having to stop and catch my breath! Thank you. —*Shirley H., Florida*

After having a stroke, I could no longer exercise the way I used to. As a result, I developed edema. A friend of mine introduced me to the Exerciser 2000 Elite™. I loved it and I purchased one for myself. After using the machine daily for a few weeks, my symptoms of edema were completely gone. I now use the machine twice a day for 16 minutes each time on speed 3. What a wonderful way to exercise.—*Robert M.*

I am in my late 80's and have diabetes. The first thing I noticed when I started using my machine was that my feet were warm when I went to bed. They were always ice cold before. Because one of my problems is poor circulation, I use the machine three times a day for 10 minutes each; in the morning, late afternoon and just before bed. I almost forgot to mention that I have not been able to lift my arms above my head. Now I can do it. You think that's no big deal until you can't do it anymore. —*Ralph K.*

As a Chiropractor, I would like to say that the Exerciser 2000 Elite™ enables people to benefit themselves at home. It is a valuable asset in moving lymph fluid, oxygenating the blood, increasing immune system function, maintaining mobility in the spine, and additionally freeing up a spine that has become stiff and arthritic. —*Garry Gorsuch, D.C.*

I love using the Exerciser 2000 Elite™ after my morning workout. It is an excellent way to cool down and it helps to start my day off right.—*Deanna C., Kansas*

My husband and I have been into natural products all of our lives but nothing has ever affected us like the Exerciser 2000 Elite™. My husband is 72 and delivers flowers. He carries 5 gallon buckets of water. Since using the machine, his back hasn't hurt him at all. My hips would hurt if I stood too long and I would get weak and have to sit down. Now I can walk and sit as long as I want. I don't take pain medication anymore. In the morning, when I get out of bed I'm not stiff anymore. At 65, wow, this is great! Thank you for offering such a great machine. We are going to tell everyone we know about it. —*Cheryl J.*

The ad I saw almost sounded "too good to be true". With your no risk money back guarantee I figured I had nothing to lose so I purchased the machine… and boy, am I glad I did! I am 75 years old and suffer from sciatica, which makes my back and legs tighten up and causes numbness. I was taking 8-10 Aleve™ every day. After using the machine for only 4 minutes, I noticed my lower back loosening up. Since I have been using the machine I haven't taken any pain pills and have been pain free. My sciatica is not giving me problems anymore and my body stays loosened up. I have also had a snoring problem for quite some time, however, since using the machine my snoring has subsided. My wife is so excited! I cannot tell you how much this machine has turned my life around. —*C. Cummings*

I have had constipation problems for over 25 years. Since I have been using the Exerciser 2000 Elite™ I have been regular every day and have begun to lose weight. This is truly a blessing and is so easy to use. —*Jeannie*

I had suffered with sleep apnea for many years and had been taking drugs for it. I was told I would have to use a breathing apparatus. In the meantime, I was introduced to the Exerciser 2000 Elite™ and decided to purchase one. Within two weeks, I was sleeping more deeply and restfully than ever before. —*David B.*

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The Bugs Who Flew Too Much

This invasion would have driven even Alfred Hitchcock psycho

BY REBECCA SICREE

"**HITCHCOCK,**" my husband said. "It's like something out of Hitchcock."

I was confused. We'd been discussing Tommy's spelling grades, which, though suspenseful, were hardly terrifying. Then I noticed a clicking sound, growing louder by the minute. My husband was staring out the window.

"At least," he said, "it's not *The Birds*."

Looking out, I saw a snow squall . . . which was odd because it was a warm, sunny day in October. It was also odd because the snowflakes were orange. As each "flake" hit our window, it made a distinct *click*, then started crawling.

It was not a storm, but a swarm. A blizzard of ladybugs was swirling around our house.

At first we thought that our house, which we'd just moved into, must be on their fall migration path. But when we opened the door, the ladybugs flew at us, fast and furious. As we retreated back inside, we realized that they had not been trying to fly south at all.

They had been trying to fly *in*.

Our friendly local entomologist informed us that the insects were actually multicolored Asian lady beetles, not your usual ladybugs. Each fall these natives of Japan swarm to sun-warmed cliffs and seek out cracks in which to spend the winter. Apparently, our house resembled a sun-warmed Japanese cliff. Apparently, *I* resembled a sun-warmed Japanese cliff. I might have written a haiku about it if the ladybugs hadn't tasted so bad when they flew into my mouth.

In the two days before the exterminators arrived, the ladybugs discovered every crack and crevice in our house. We hid inside and vacuumed the ceiling every hour. We developed a new appreciation for the ten plagues of the Bible, four of which involved swarms. "Can you imagine the poor Egyptians going through all this *without* a Shop-Vac?" my husband asked. And, I thought, with flies and frogs? (Personally, I would have let the Israelites go after just *one* plague.)

We think of ladybugs as little cute-as-a-button beetles. Aphids, their usual prey, know better. They know that ladybugs are really little cute-as-a-button Sherman tanks. With wings. Many of them could resist the suction of even our industrial-strength vacuum cleaner.

Eventually even a Shop-Vac fills up. This presented new difficulties. One was where to empty it, because, of course, the ladybugs were all still alive inside. The other was how to prevent 10-year-old Tommy from opening it and looking in.

"Where," my husband asked, "is an insectivore when you need one?" He disposed of the bugs after dark with the help of a little gasoline. We told the boys, Tommy and his 2-year-old brother, Jamie, that the bugs had a nice funeral pyre.

But the onslaught continued. The next day my husband started talking, rather grimly, about flamethrowers. He even reminisced about 17-year locusts. "At least," he pointed out, "*they* didn't try to get into the house."

The exterminators arrived and sprayed the outside of our house. "This is nothing," one of them observed. "At another house, we vacuumed up five garbage bags full of them." Outdoors, all we had to do was sweep away the casualties. Indoors, we still had to conduct what the military calls a "mopping up action." Even Jamie helped chase down the holdouts. I know this because I discovered two brightly colored wings hanging out of his mouth.

Hitchcock indeed.

REBECCA SICREE *writes from Boalsburg, Pennsylvania.*

ERIC PALMA